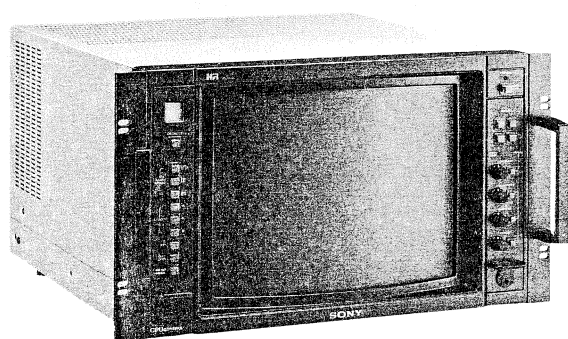


SONY

TRINITRON® COLOR VIDEO MONITOR

BVM-1311

BVM-1411P



BVM-1311

Chassis No. SCC-F91A-A

BVM-1411P

Chassis No. SCC-A10B-A



OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1311)

Serial No. 2000001 and Higher (BVM-1411P)

WARNING

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

VORSICHT!!

Hinweis für den Benutzer
Das Gerät ist nicht für den Einsatz in Bildschirmarbeitsplätzen vorgesehen.

CAUTION!!

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

ATTENTION!!

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTERIEUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LA PANNEAU FRONTAL.**

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Section 1 Operation

1-1. Overview

1-1-1. Features

The BVM-1311 and BVM-1411P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.

The BVM-1311 is the NTSC model intended for use in NTSC color standard areas and the BVM-1411P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.

The other features and operations are the same.

High-resolution picture

The Super Fine Pitch Trinitron picture tube (0.25-mm aperture grille pitch) gives a high-resolution, high-contrast picture. Horizontal resolution is more than 700 TV lines at the center of the picture.

Stabilized color temperature

The incorporated beam control circuit maintains the color temperature constant for a long period of time.

Picture aspect selection

In addition to the conventional 4:3 aspect, the 16:9 aspect can be selected for monitoring the increasing number of wide-screen programs.

Split screen for precise picture confirmation

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

Blue-only mode for precise evaluation of noise components

In blue-only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

Easy and precise convergence adjustment

The convergence can be adjusted at 15 points (for 4:3-aspect pictures) of the screen. This system facilitates adjustment of the peripheral areas of the screen.

Section 1 Operation

Easy-to-use menu operations

The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.

Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-1450 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- Drawers containing convergence, white balance and menu controls and other function selectors
- High-performance comb filters available for the BVM-1311 as built-in standard. (For the BVM-1411P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting, using the optional BKM-1400 rack mount kit

1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the BVM-1311/1411P.

Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

BKM-1400 rack mount kit

For mounting in an EIA standard 19-inch rack

BKM-1410 NTSC adaptor (BC board) [built-in standard for the BVM-1311]

Decoder board for the NTSC color system

BKM-1411 NTSC comb adaptor (BB board)

Comb filter board for the NTSC color system

BKM-1412 NTSC comb adaptor (BT board) [built-in standard for the BVM-1311]

Dynamic comb filter board for the NTSC color system

BKM-1420 PAL adaptor (BD board) [built-in standard for the BVM-1411P]

Decoder board for the PAL color system

BKM-1421 PAL-M adaptor (BM board)

Decoder board for the PAL-M color system

BKM-1422 PAL comb adaptor (BT board)

Comb filter board for the PAL color system

BKM-1430 SECAM adaptor (BE board)

Decoder board for the SECAM color system

BKM-1440 RGB/component adaptor (BF board)

Decoder outputs of RGB or component signals

BKM-1450 auto set-up adaptor (BN, BO and BP boards)

For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

BKM-1460 VITC adaptor (BL board)

Reader of Vertical Interval Time Code

BKM-1470 safe area display (BQ board)

For displaying the safe area

BKM-1480 black level signal generator (BS board)

For generating black level signals

BKM-2085-14 digital 4:2:2 serial input kit (BA3 and BV boards)

For two serial inputs of component digital video signals

BKM-2090-14 D-2 serial input kit (BA3 and BU boards)

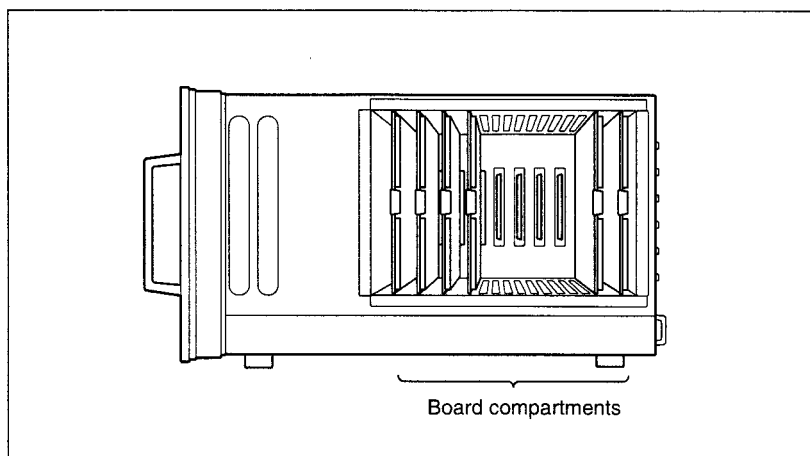
For serial input of a digital composite video signal



Section 1 Operation

Combination of the optional boards

The BVM-1311/1411P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-1311 comes from the factory with the BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B4 and B5.

The BVM-1411P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.

Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page.

Add the desired boards or replace the supplied BT, BC or BD board with optional boards, referring to the table on the next page.

Notes

- The compartments other than B1 through B5 are reserved for the supplied BA, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

Board assignment

Board name	Function	Compartment name				
		B5	B4	B3	B2	B1
BB (BKM-1411)	NTSC comb filter	X	○	○	○	○
BT (BKM-1412)	NTSC comb filter	○	○	○	○	○
BT (BKM-1422)	PAL comb filter	○	○	○	○	○
BC (BKM-1410)	NTSC decoder	○	○	○	○	○
BD (BKM-1420)	PAL decoder	○	○	○	○	○
BE (BKM-1430)	SECAM decoder	○	○	○	○	○
BM (BKM-1421)	PAL-M decoder	○	○	○	○	○
BF (BKM-1440)	RGB/component adaptor	X	X	○	X	X
BL (BKM-1460)	VITC reader	X	X	X	○	X
BQ (BKM-1470)	Safe area display	X	△	X	○	X
BS (BKM-1480)	Black level signal generator	○	○	○	○	○
BN, BO, BP (BKM-1450)	Auto set-up adaptor	○	○	X	X	X
BV, BA3 (BKM-2085-14)	Digital 4:2:2 serial interface	X	X	X	X	○
BU, BA3 (BKM-2090-14)	D-2 serial interface	X	X	X	X	○

○ : acceptable

× : not acceptable

△ : acceptable but the switch or control settings on the subcontrol panels cannot control the display.

Notes

- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- Do not use the BB (NTSC comb filter) and the BT (NTSC comb filter) boards simultaneously. This causes malfunctions of the monitor.

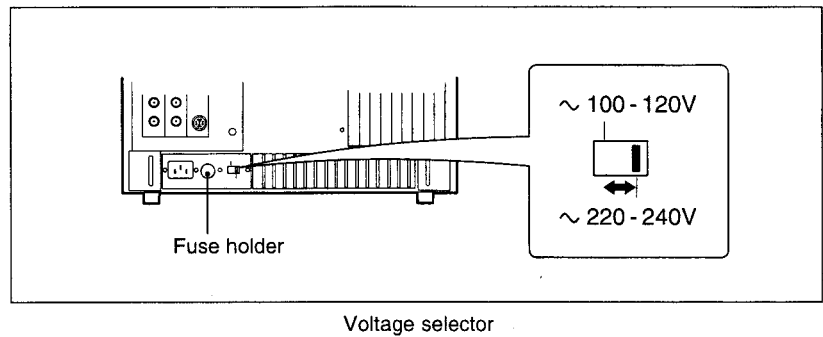
For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.

Section 1 Operation

1-2. Voltage Selection

The BVM-1311 operates on 100-120 V AC and the BVM-1411P operates on 220-240 V AC.

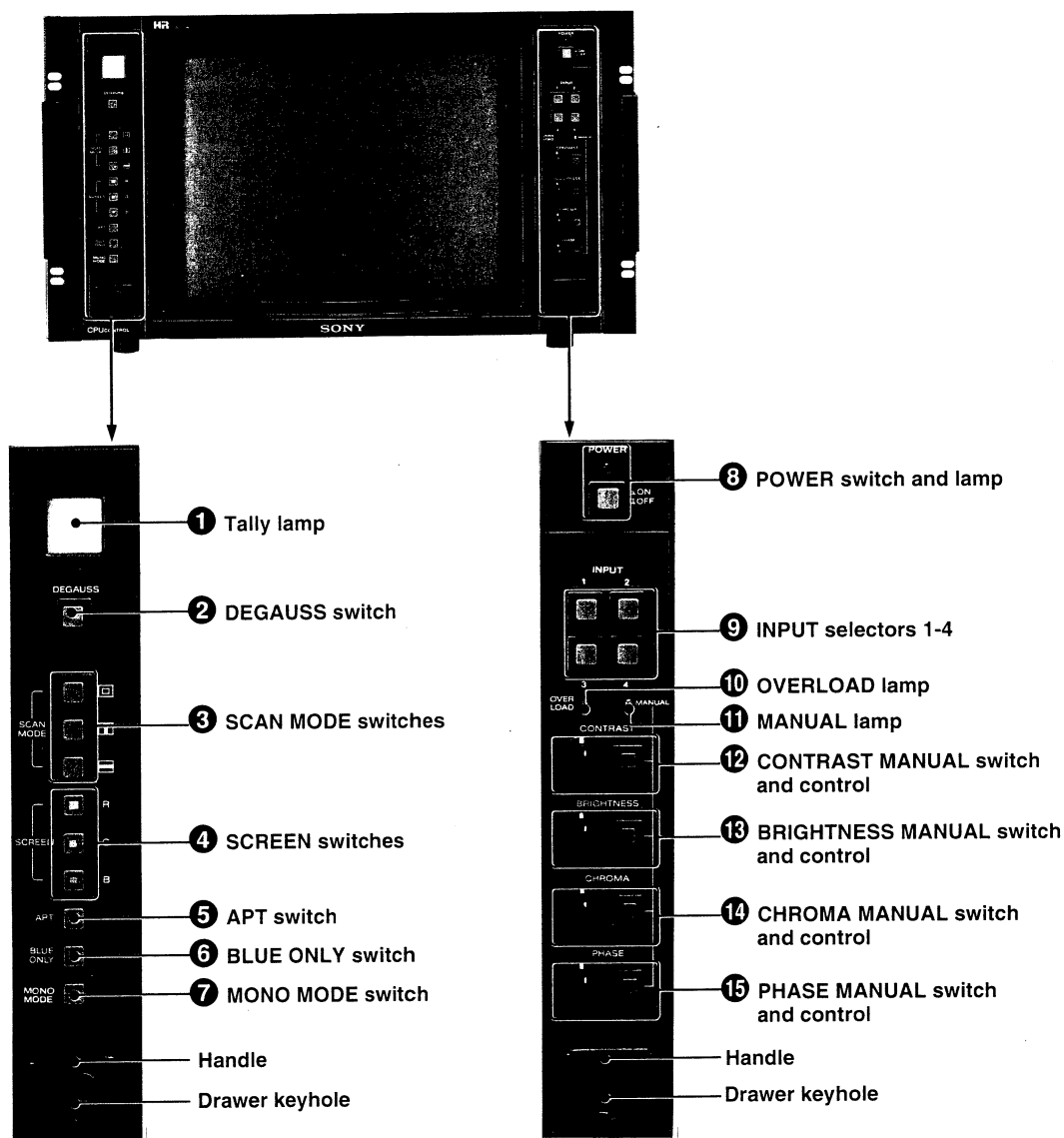
Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.

**Note**

Use a 4A/125 V fuse for the BVM-1311 (100-120 VAC) and a T2A/250V fuse for the BVM-1411P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

1-3. Location and Function of Parts

1-3-1. Front Panel



The photo shows the BVM-1311. The parts configuration is common to the BVM-1411P.

Front panel



Section 1 Operation

① Tally lamp

Lights when pin No. 3 and No. 8 of the REMOTE connector on the rear panel are short-circuited. Insert one of the supplied tally number plates (1 to 5) when the left drawer is open.

② DEGAUSS switch

When the power is turned on, automatic degaussing is activated.

To demagnetize the screen manually, press this switch momentarily with the power on.

When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

③ SCAN MODE switches

 **(underscan):** Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

 **(horizontal delay):** Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

 **(vertical delay):** Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the  and  switches.
- To resume normal scanning, press to release the depressed switches.

④ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

⑤ APT (aperture) switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APERTURE control inside the left drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the internal BG board.

With the S1 switch set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

With the S1 switch set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

⑥ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

⑦ MONO MODE switch

Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.

Depress the switch to display color pictures in monochrome (MONO mode).

⑧ POWER switch and lamp

Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

⑨ INPUT selectors 1 - 4

Select the input signal to be monitored by pressing one of these buttons.

The requirements of the input signals can be set with the CONFIGURATION buttons in the right drawer and can be assigned independently to the selectors and stored in memory through the INPUT CONFIG menu operation.

See "1-4-2. Setting the Input Configuration."

10 OVERLOAD lamp

Lights to warn of overloading of the CRT.

11 MANUAL lamp

Lights when any of the four MANUAL switches 12 through 15 is depressed.

12 CONTRAST MANUAL switch and control

When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.

To adjust the contrast manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

13 BRIGHTNESS MANUAL switch and control

When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.

To adjust the brightness manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

14 CHROMA MANUAL switch and control

When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.

To adjust the color saturation manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

15 PHASE MANUAL switch and control

When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.

To adjust the subcarrier phase manually, depress the switch and turn the control.

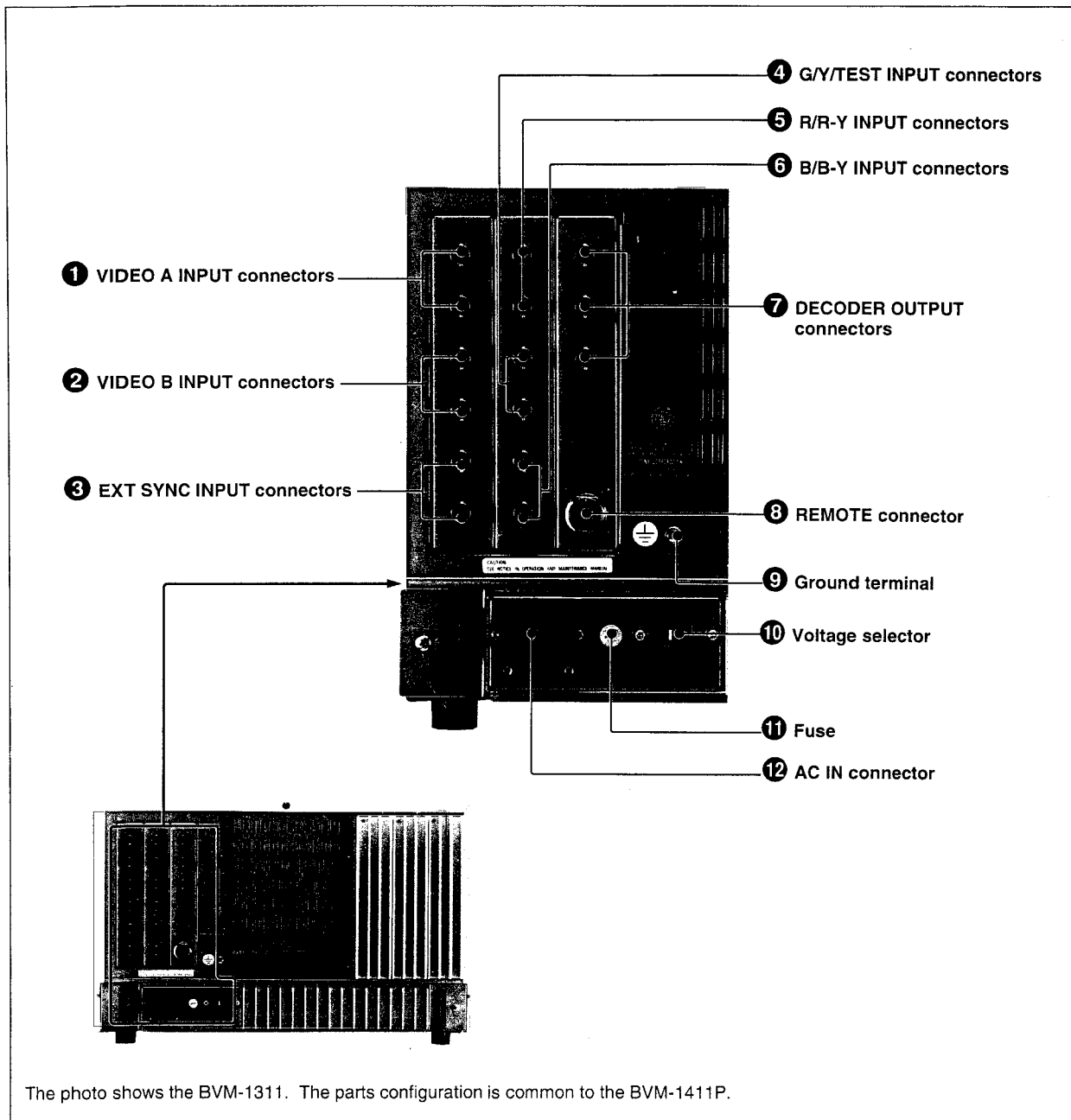
See "1-4-3. Presetting the Picture Levels."

Note

The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the right drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

Section 1 Operation

1-3-2. Rear Panel



Rear panel

1 VIDEO A INPUT connectors (BNC)

2 VIDEO B INPUT connectors (BNC)

Input composite video signals.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

3 EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

④ G/Y/TEST INPUT connectors (BNC)**⑤ R/R-Y INPUT connectors (BNC)****⑥ B/B-Y INPUT connectors (BNC)**

Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the right drawer.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

⑦ DECODER OUTPUT connectors (BNC)

Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

To provide RGB output, set the S1 selector to the upper position.

To provide component output, set it to the lower position.

Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX button.
- The color killer circuit is not activated for output signals.

⑧ REMOTE connector

Connect to an external control device using the supplied 10-pin connector.

To enter remote control mode, press the LOCAL/REMOTE button in the right drawer so that the associated lamp lights.

The input mode and the pin assignment can be set through the REMOTE menu operation.

See "1-4-6. Assigning the Remote Control Functions."

⑨ Ground terminal

Connect to the system ground, when required.

⑩ Voltage selector

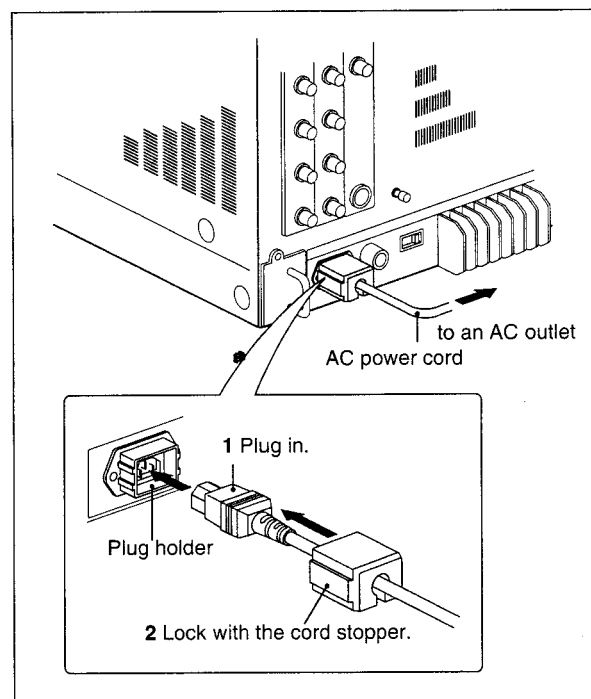
Set to 100-120 V AC for the BVM-1311 or 220-240 V AC for the BVM-1411P.

⑪ Fuse

Use a 4A fuse for the BVM-1311 or a T2A fuse for the BVM-1411P.

⑫ AC IN connector

Connect the supplied AC power cord here and secure it with the supplied cord stopper.

**NOTICE**

THIS NOTICE IS APPLICABLE FOR THE USA ONLY.

If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

DO NOT USE ANY OTHER POWER CORD.

Plug cap	Tandem blade with ground pin
Cord	Type SJT, three 16 or 18 AWG Wires

Length	Maximum 15 feet
--------	-----------------

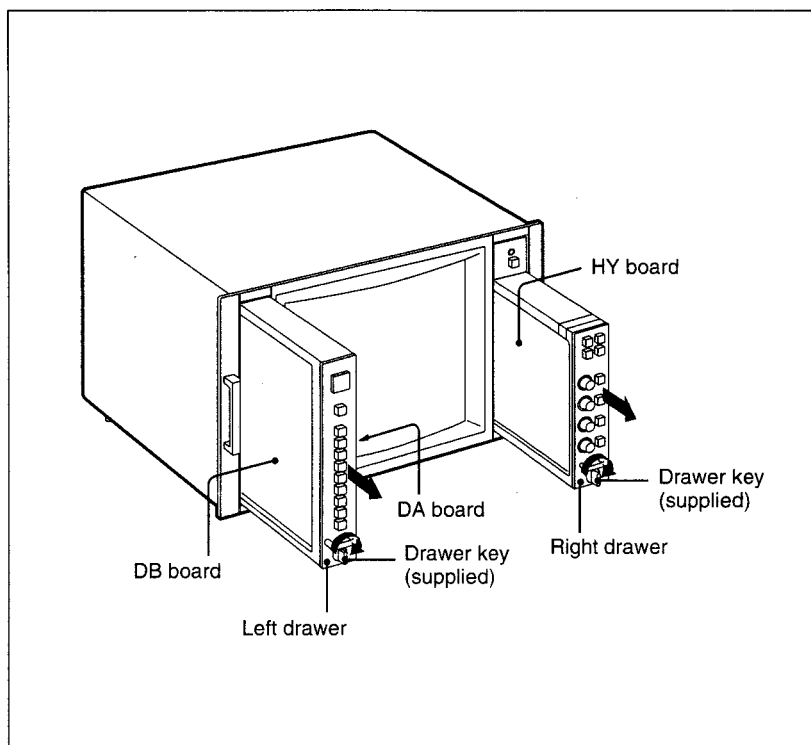
Rating	Minimum 10 A, 250 V AC
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Section 1 Operation

1-3-3. Subcontrol Panels inside the Drawers

Insert the supplied drawer key into the keyholes of the drawer lock, turn it 90° clockwise and pull the drawer out.

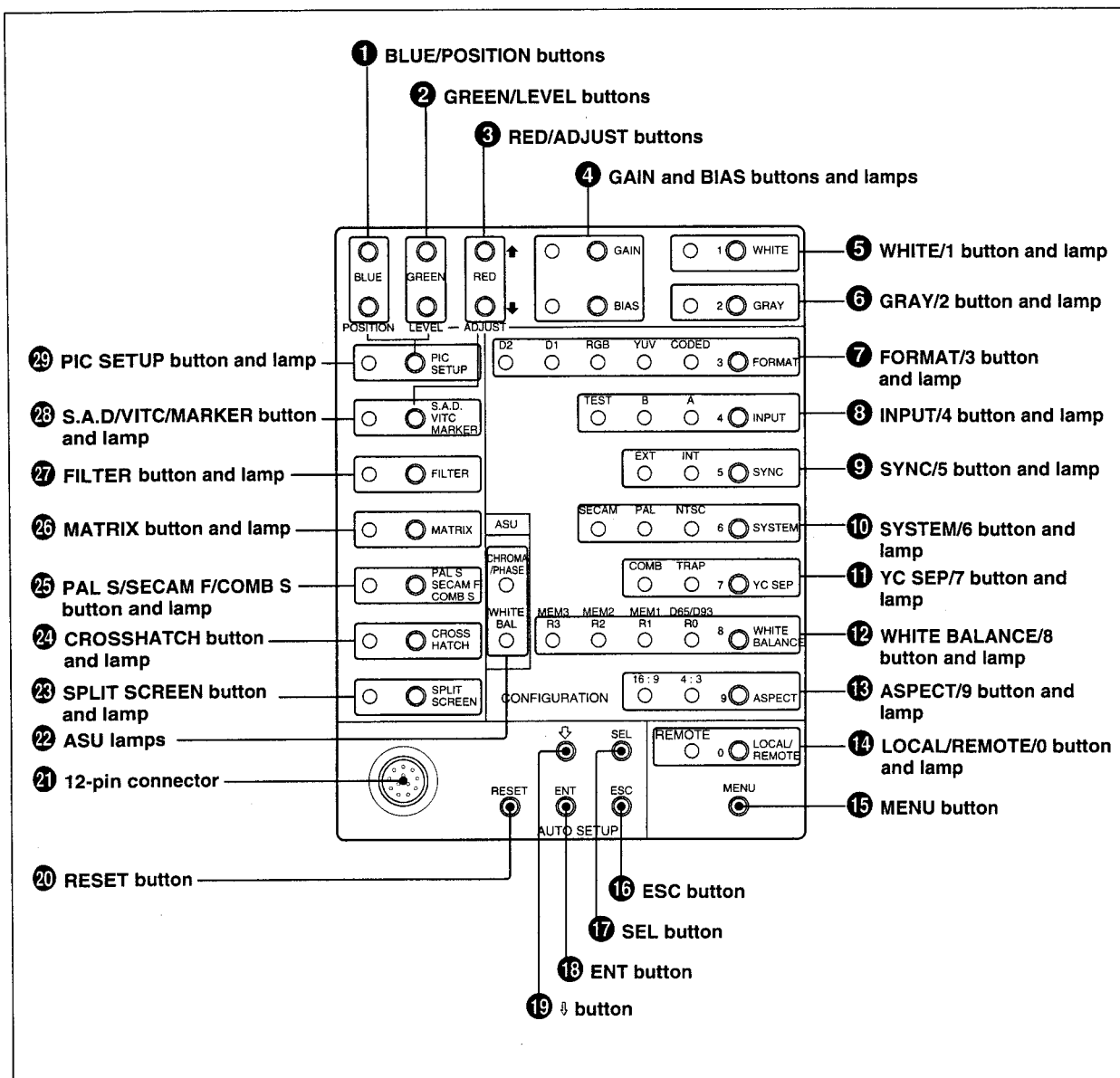
Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



Subcontrol panels

When turning the controls on the DA and DB boards, use the supplied screwdriver.

HY board (input configuration, menu and auto setup operation section)



HY board

1 BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

2 GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

Section 1 Operation

③ RED/ADJUST buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these button to adjust the red signal.

When the safe area is displayed (the S.A.D/VITC/MARKER lamp is lit), use them to adjust the safe area size.

④ GAIN and BIAS buttons and lamps

When adjusting the white balance, select the adjustment items.

BIAS: Adjust the white balance at the lowlight and brightness of the screen.

GAIN: Adjust the white balance at the highlight and contrast of the screen.

For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

⑤ WHITE/1 button¹⁾ and lamp

When adjusting the white balance at the highlight, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

⑥ GRAY/2 button¹⁾ and lamp

When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

⑦ FORMAT/3 button¹⁾ and lamps

Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.

CODED: For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.

YUV: For monitoring Y/R-Y/B-Y component signals.

RGB: For monitoring RGB signals.

D-1: For monitoring D-1 format component signals.

D-2: For monitoring a D-2 format composite signal.

⑧ INPUT/4 button¹⁾ and lamps

When monitoring a composite signal, select the input connector.

Press this button so that the lamp of the appropriate connector lights.

A: For monitoring the signal connected to the VIDEO A INPUT connector.

B: For monitoring the signal connected to the VIDEO B INPUT connector.

TEST: For monitoring the test signal connected to the G/Y/TEST connector.

⑨ SYNC/5 button¹⁾ and lamp

Select the sync mode. Press this button so that the lamp of the appropriate mode lights.

INT (internal sync mode): The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.

EXT (external sync mode): The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

⑩ SYSTEM/6 button¹⁾ and lamps

When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.

NTSC: For monitoring a signal of the NTSC color system.

PAL: For monitoring a signal of the PAL color system.

SECAM: For monitoring a signal of the SECAM color system.

Note

If the decoder board for the selected color system has not been installed:

- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

11 YC SEP(Y/C separation filter)/7 button¹⁾ and lamps

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

COMB: To use the comb filter with the comb filter board (BB or BT) installed.

TRAP: To use the built-in trap filter.

Note

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

12 WHITE BALANCE/8 button¹⁾ and lamps

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights. At the factory, the white balance for D6500 has been stored in all the register.

D65/D93 R0: To use the white balance and picture levels stored in register 0.

MEM 1 R1: To use the white balance and picture levels stored in register 1.

MEM 2 R2: To use the white balance and picture levels stored in register 2.

MEM 3 R3: To use the white balance and picture levels stored in register 3.

For details, see "1-4. Menu Operations."

13 ASPECT/9 button¹⁾ and lamps

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

4:3: For the 4:3 aspect

16:9: For the 16:9 aspect.

14 LOCAL/REMOTE/0 button¹⁾ and lamp

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."

15 MENU button

Press to initiate menu operations. The initial menu is displayed.

16 ESC (escape) button

Press to quit menu or auto setup operations.

17 SEL (select) button

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

For details, refer to the operation and maintenance manual of the BKM-1450 auto set-up adaptor.

18 ENT (enter) button

Press to proceed to the next step during menu or auto setup operation and save the data.

19 ↓ (cursor) button

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

20 RESET button

Press to reset an auto setup operation.

21 12-pin connector

For the optional BKM-2053 auto set-up probe.

22 ASU (automatic setup) lamps

CHROMA/PHASE: Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu is selected in auto setup operations.

WHITE BAL: Lights when one of the color temperature to be transferred to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

23 SPLIT SCREEN button and lamp

To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

24 CROSSHATCH button and lamp

To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.

The crosshatch pattern is synchronized with the selected composite sync signal.

To turn off the pattern, press the button again.

25 PAL S/SECAM F/COMB S button and lamp

While monitoring a PAL signal, the

demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected.

By pressing the button to turn off the lamp, D (deluxe) mode is selected.

While monitoring a SECAM signal, the ID

signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.

When the BKM-1411/1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected.

26 MATRIX button and lamp

Should normally be OFF (lamp not lit).

By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors.

To turn off the matrix circuit, press the button again.

27 FILTER button and lamp

To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights.

To deactivate the filter for a wider frequency range, press the button again.

Note

In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

28 S.A.D (safe area display)/VITC/MARKER button and lamp

When the safe area is displayed with the BQ board (BKM-1470 safe area display) installed, the adjustment of the safe area size can be enabled.

When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

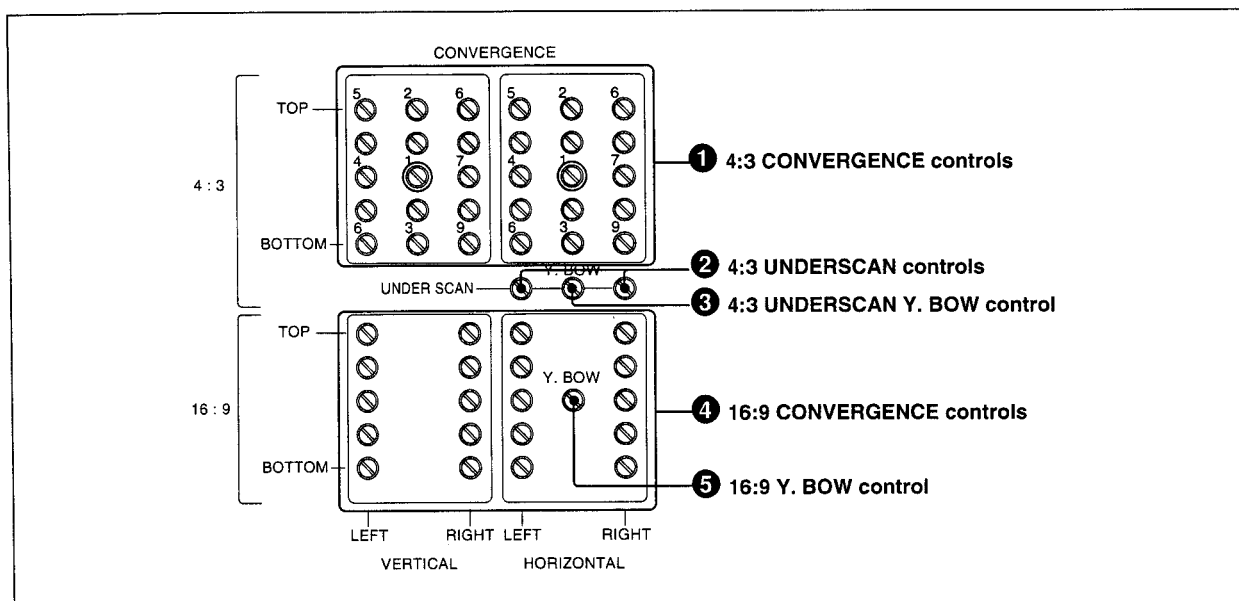
29 PIC SETUP (picture setup) button and lamp

Use to match the black reference of the monitor with the black level of the input signal to be monitored.

By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.

See "1-6-2. Black Level Adjustment."

DB board (Convergence adjustment section)



DB board

❶ 4:3 CONVERGENCE controls

Adjust the convergence of the 4:3-aspect normal picture. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally. Fifteen controls cover the entire screen so that each control adjusts the corresponding portion of the screen.
See "1-5. Convergence Adjustments."

❷ 4:3 UNDERSCAN controls

Adjust the horizontal convergence of the 4:3-aspect underscanned picture.
See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

❸ 4:3 UNDERSCAN Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 4:3-aspect underscanned picture.
See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

❹ 16:9 CONVERGENCE controls

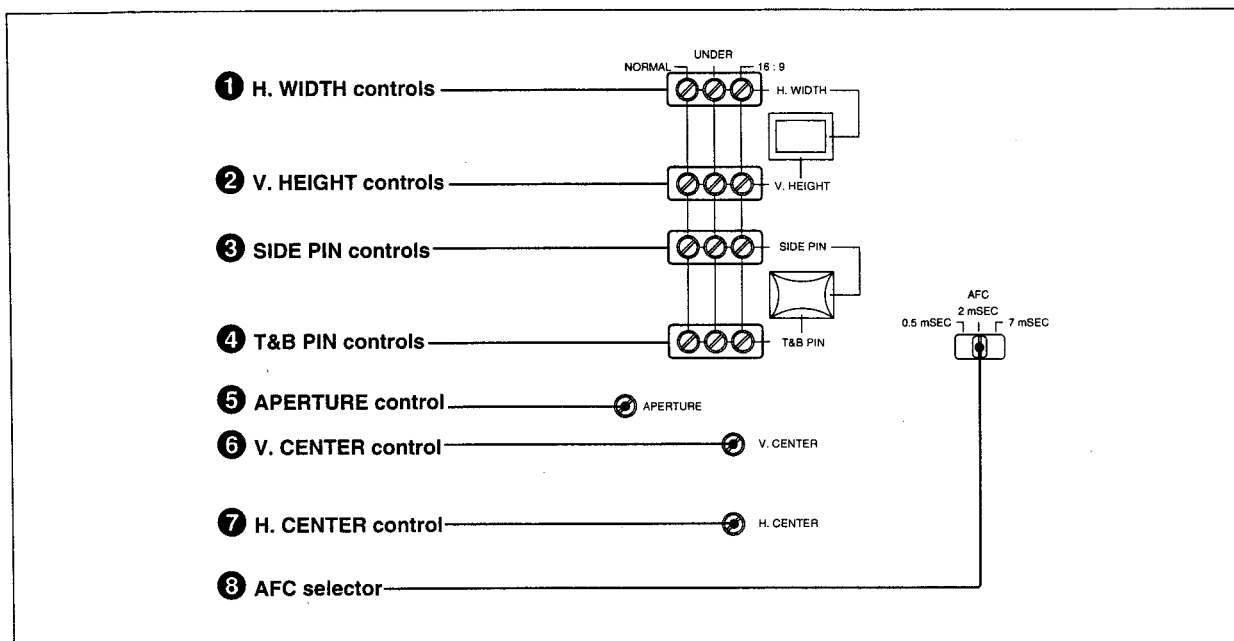
Adjust the convergence of the 16:9-aspect picture at the right and left portions of the screen after adjusting it at the center of the picture using the 4:3 CONVERGENCE controls. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally.
See "1-5-3. Convergence of a 16:9-Aspect Picture."

❺ 16:9 Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 16:9-aspect picture.
See "1-5-3. Convergence of a 16:9-Aspect Picture."

Section 1 Operation

DA board (H.V. oscillator section)



DA board

1 H. WIDTH (horizontal width) controls

Adjust the horizontal width of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

2 V. HEIGHT (vertical height) controls

Adjust the height of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

3 SIDE PIN (pincushion) controls

Correct the side pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

4 T&B PIN (top and bottom pincushion) distortion controls

Correct the top and bottom pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

5 APERTURE control

Adjust the frequency response when the APERTURE switch on the front panel is depressed.

6 V. CENTER (vertical centering) control

Adjust the vertical position of the picture.

7 H. CENTER (horizontal centering) control

Adjust the horizontal position of the picture.

8 AFC (automatic frequency control) selector

Select the AFC time constant.

0.5 mSEC (fast): This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.

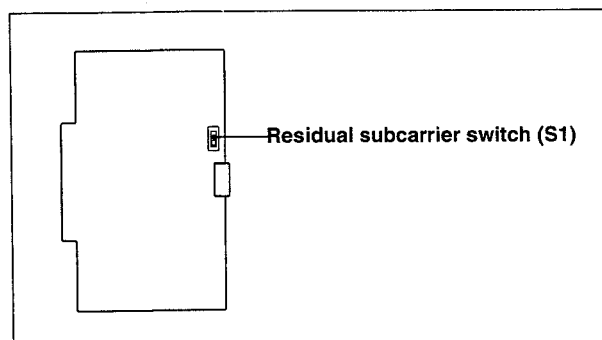
2 mSEC (normal): Normally set to this position.

7 mSEC (slow): This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.

1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside cabinet, see Section 2.

BJ board



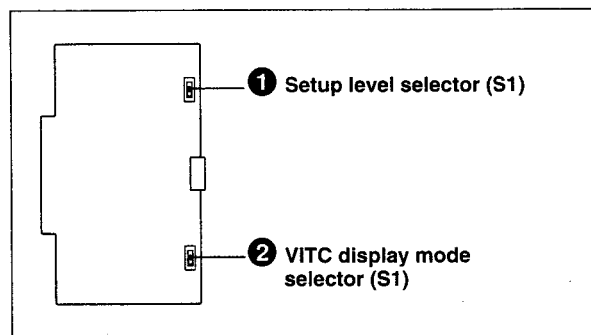
BJ board

Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, whether a residual subcarrier is preset, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

BH board



BH board

1 Setup level selector (S2)

Select the setup level.

0 IRE: The setup level is 0%.

AUTO: The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.

See "1-4-7. Defining the Monitor Configuration."

7.5 IRE: The setup level is 7.5%.

The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from -2.5% through +12.5%.

2 VITC display mode selector (S1)

Use to invert the character and background colors for VITC display.

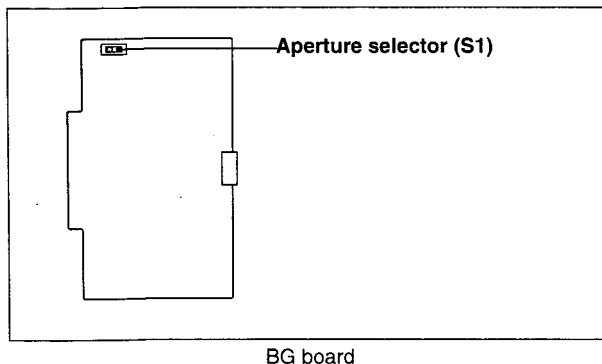
Upper position: Factory-preset position. The VITC is displayed in white characters on a black background.

Lower position: The VITC is displayed in black characters on a white background.

For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.

Section 1 Operation

BG board

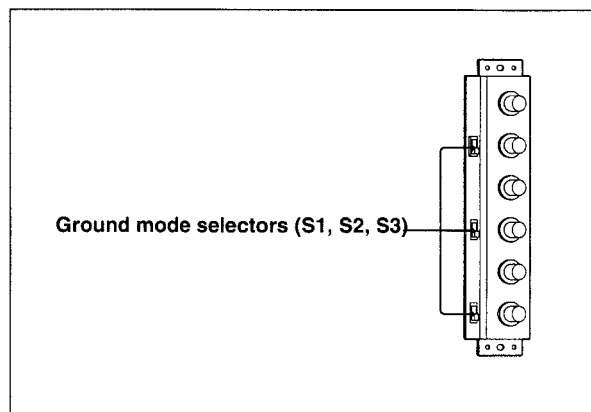


Aperture selector (S1)

Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

Ground mode selectors (S1, S2, S3)

The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

S (nonfloating): Factory-preset position.

Normally keep the selectors at this position.

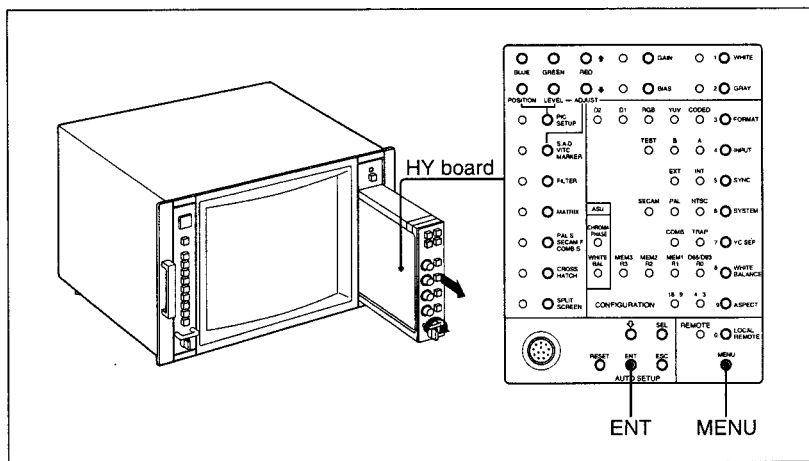
F (floating): When there is hum in the input signal to be monitored, set to this position. Common mode noise will be rejected.

1-4. Menu Operations

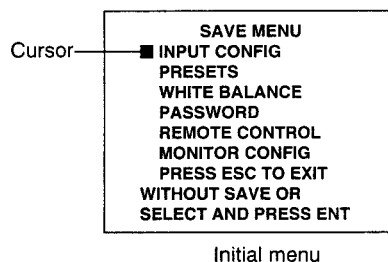
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

1-4-1. Starting with the menu operations

For the menu operations, use the buttons on the HY board in the right drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



Initial menu

INPUT CONFIG (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.

PRESETS: To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.

WHITE BALANCE: To adjust the white balance.

PASSWORD: To specify and activate/deactivate the password.

REMOTE CONTROL: To assign the remote control functions.

MONITOR CONFIG (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

Section 1 Operation

To select a menu option

Move the cursor with the $\downarrow$ button to the line of the desired menu option and press the ENT button.

Pressing the $\downarrow$ button moves the cursor downward and, if at the bottom, to the top.

To cancel the menu operation on the way

Press the ESC button.

At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

Factory-set configuration

Signal	INPUT selectors			
	1	2	3	4
FORMAT	CODED	CODED	COMPONENT	RGB
INPUT	A	B	—	—
SYNC	INT	INT	INT	INT
SYSTEM ^{a)}	NTSC/PAL	NTSC/PAL	—	—
ASPECT	4 : 3	4 : 3	4 : 3	4 : 3
YC SEP ^{b)}	COMB	COMB	—	—

a) NTSC for the BVM-1311 and PAL for the BVM-1411P.

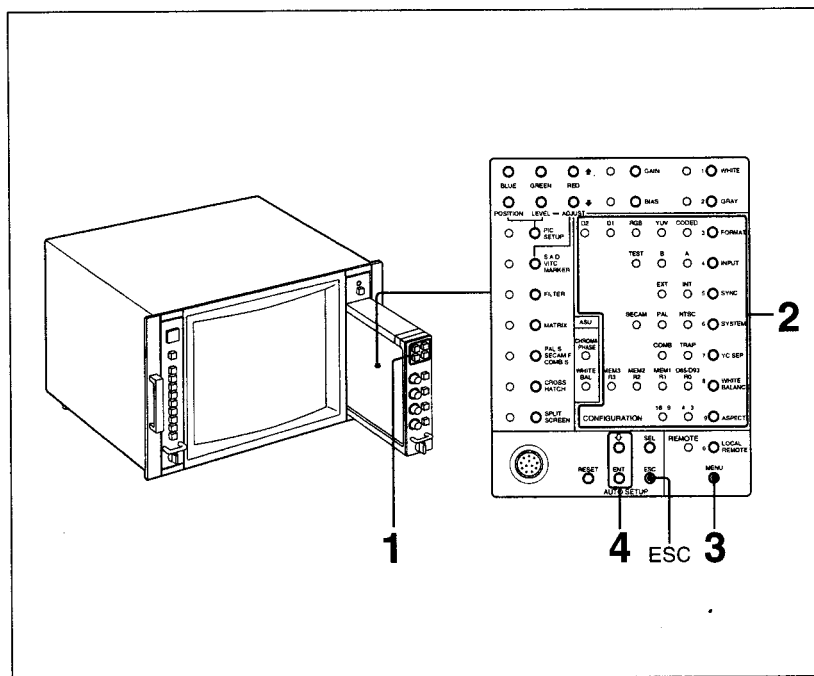
b) Only for BVM-1311. The INPUT selectors 1 and 2 on the BVM-1411P have been set to TRAP.

Using the CONFIGURATION buttons on the HY board in the right drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation.

The stored configuration is always obtained when the assigned INPUT selector is pressed.

When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed.

Operation



- 1** Press one of the INPUT selectors on the front panel.
- 2** Using the following CONFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.

FORMAT: Select the signal format (CODED, YUV, RGB, D-1 or D-2).

INPUT: Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.

SYNC: Select the sync mode (INT or EXT).

SYSTEM: Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.

YC SEP: Select the filter when you select NTSC or PAL for the color system.

WHITE BALANCE: Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.

See "1-4-4. Selecting the White Balance."

ASPECT: Select the picture aspect (4:3 or 16:9).

- 3** When the settings are completed, press the MENU button. The initial menu is displayed.

Section 1 Operation

- 4 Should the cursor on the initial menu not be located at INPUT CONFIG, press the ↓ button until it returns to INPUT CONFIG, and press the ENT button.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.

The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

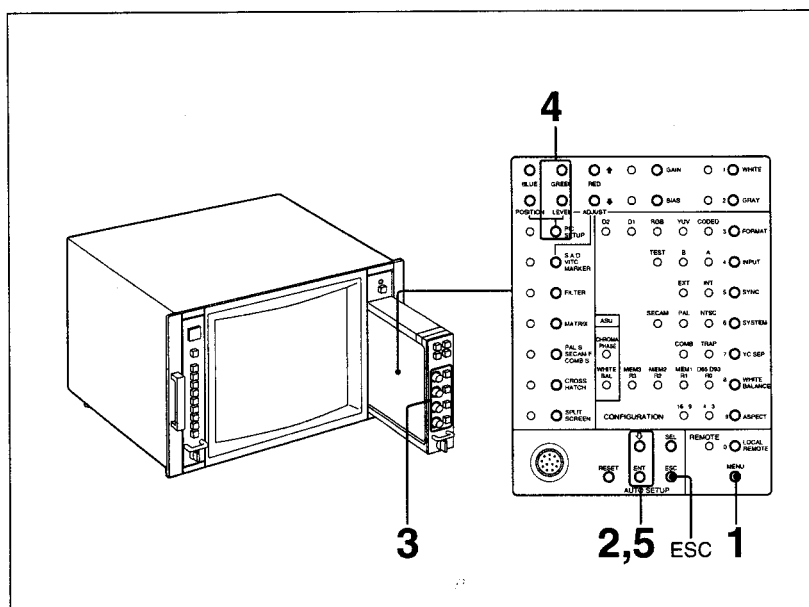
To cancel the operation

Press the ESC button before pressing the ENT button in step 4.

1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches PRESETS, then press the ENT button.
The SAVE PRESETS menu is displayed.

SAVE PRESETS			
■	TEXT ON/OFF		
	DATA REGISTER R0 *		
	DATA REGISTER R1		
	DATA REGISTER R2		
	DATA REGISTER R3		
PHASE	100	BRIGHT	100
CHROMA	100	CONTRAST	100
PICTURE SETUP LEVEL	100		
SELECT AND PRESS ENT			

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

- 3** Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.
- 4** Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

Note

The adjustments in steps 3 and 4 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.

For the picture setup level, follow the procedure in "1-6-2. Black Level Adjustment."

To return to the SAVE PRESETS menu, press the ENT button again.

- 5** Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in step 5.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

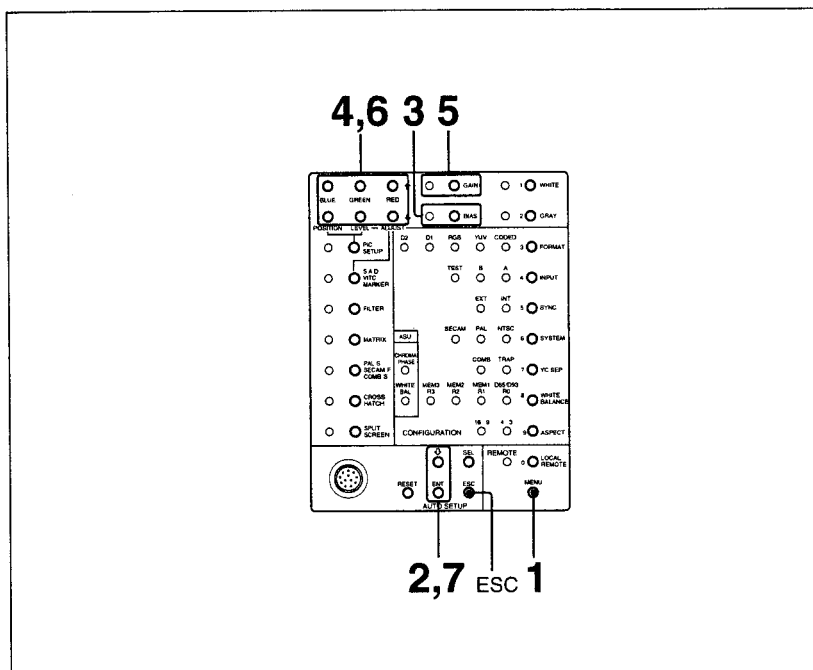
1-4-4. Selecting the White Balance

The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D6500 has been stored in all the registers.

Note

The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches WHITE BALANCE,
then press the ENT button.
The SAVE WHITE BALANCE menu is displayed.

```

SAVE WHITE BALANCE
■ TEXT ON/OFF
DATA REGISTER R0*
DATA REGISTER R1
DATA REGISTER R2
DATA REGISTER R3
R: - GAIN 100    BIAS 100
G: - GAIN 100    BIAS 100
B: - GAIN 100    BIAS 100
SELECT AND PRESS ENT
  
```

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.
- 5** Press the GAIN button.
The associated lamp lights.
- 6** Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.

Then, adjust the white balance by following the procedure in “1-6-1. White Balance Adjustment.”

To return to the SAVE WHITE BALANCE menu, press the ENT button again.

- 7** Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.

The message “DATA SAVED” is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 7.

1-4-5. Changing and Applying the Password

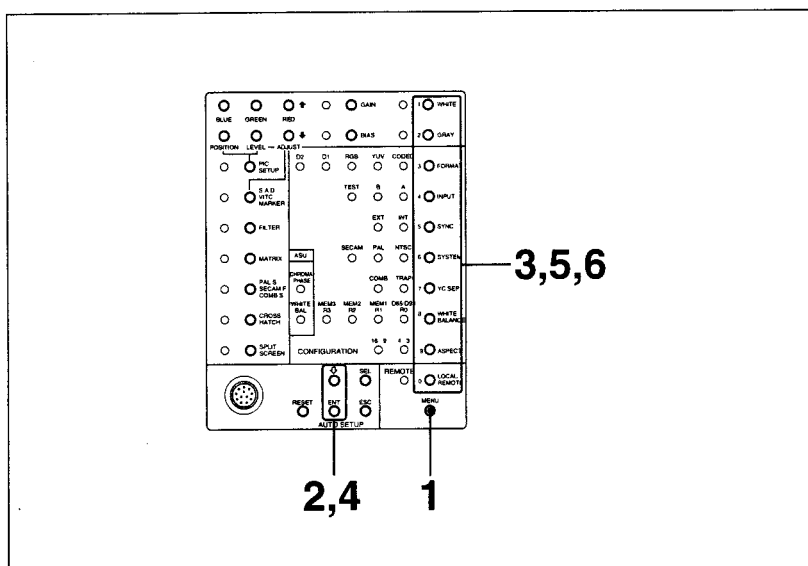
The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

The message **"PLEASE ENTER PASSWORD"** is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message **"INCORRECT ENTRY"** is momentarily displayed and the menu operation is canceled.

To change the password

"9999" has been specified for the password at the factory. Change it to your desired four-digit number as follows.



- 1** Press the MENU button.
The initial menu is displayed.

Section 1 Operation

- 2 Press the $\downarrow$ button until the cursor reaches PASSWORD, then press the ENT button.
The message "ENTER PASSWORD" is displayed.
- 3 Enter the current password (Factory-set: 9999).
The PASSWORD MENU is displayed.

PASSWORD MENU ■ CHANGE PASSWORD APPLY PASSWORD SELECT AND PRESS ENT

- 4 Select the CHANGE PASSWORD option.
The message "ENTER NEW PASSWORD" is displayed.
- 5 Enter any desired four-digit number as your new password using the buttons labeled 0 to 9.
The message "PLEASE RE-ENTER NEW PASSWORD TO CONFIRM" is displayed.
- 6 Enter the new password again.
The message "PASSWORD CHANGED" is displayed and the new password is now valid.

Note

If an incorrect password is entered, "INCORRECT ENTRY. PASSWORD NOT CHANGED" is displayed and the menu operation is canceled.

To cancel the operation

Press the ESC button before re-entering the new password in step 6.

To apply the password

The specified password can be activated/deactivated independently for each of the initial menu options and, with the BKM-2056 installed, the auto setup option.

- 1** Preform steps 1 through 3 mentioned in “To change the password.”
- 2** By pressing the ↓ button and then ENT button, select the APPLY PASSWORD option.
The APPLY PASSWORD menu is displayed.

APPLY PASSWORD	
■ INPUT CONFIG	NO
WHITE BALANCE	NO
PRESETS	NO
AUTO SETUP	NO
REMOTE CONTROL	NO
MONITOR CONFIG	NO
SAVE AND APPLY	
SELECT AND PRESS ENT	

NO is displayed for each option for which the password is not activated.

YES is displayed for each option for which the password is activated.

- 3** By pressing the ↓ button, move the cursor to the option for which the password application is to be changed.
- 4** Press the ENT button to change NO to YES or vice versa.
(Pressing the button toggles the YES/NO setting.)

Repeat steps 3 and 4 for the other options as desired.

- 5** When the password application setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message “PASSWORD APPLIED” is momentarily displayed, and the monitor returns to normal status.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

Section 1 Operation

1-4-6. Assigning the Remote Control Functions

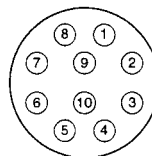
The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.

The mode change is achieved through the REMOTE CONTROL menu operation.

The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

Function			Pin No.						
INPUT	SYNC	MODE	1	2	3	4	5	6	7
INPUT 1	INT	AUTO	O	O	-	O	S	-	-
		MONO	S	O	-	O	S	-	-
	EXT	AUTO	O	O	-	S	S	-	-
		MONO	S	O	-	S	S	-	-
INPUT 2	INT	AUTO	O	S	-	O	S	-	-
		MONO	S	S	-	O	S	-	-
	EXT	AUTO	O	S	-	S	S	-	-
		MONO	S	S	-	S	S	-	-
VITC OFF			-	-	-	-	-	S	-
VITC HOLD			-	-	-	-	-	O	S
TALLY ON			-	-	S	-	-	-	-

S: Short-circuit with pin No.8

O: Open

-: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.

Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

CONFIGURE PARALLEL mode

The functions of the buttons or switches on the front panel or in the drawer listed below can be assigned to pins 1, 2 and 4 through 7, as desired.

Front panel

INPUT selectors 2 to 4 (input selection)

MONO MODE switch (AUTO/MONO mode switching)

HY board inside the drawer

WHITE button (ON/OFF)

SYNC button (INT/EXT sync mode switching)

YC SEP button (COMB/TRAP filter switching)

ASPECT button (16:9/4:3 picture aspect switching)

S.A.D /VITC/MARKER button (S.A.D. or VITC ON/OFF)

FILTER button (ON/OFF)

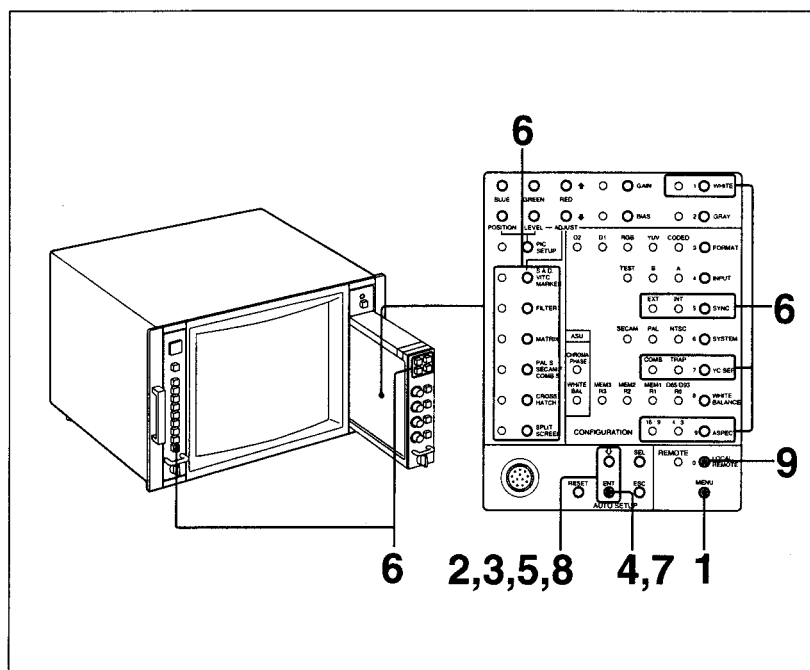
MATRIX button (ON/OFF)

PAL S/SECAM F/COMB S button (mode or type switching)

CROSSHATCH button (ON/OFF)

SPLIT SCREEN button (ON/OFF)

Operation



- 1 Press the MENU button to display the initial menu.

Section 1 Operation

- 2** Move the cursor to REMOTE CONTROL and press the ENT button.
The REMOTE CONTROL MENU is displayed.

REMOTE CONTROL MENU ■ SERIAL REMOTE STANDARD PARALLEL CONFIGURE PARALLEL SELECT AND PRESS ENT
--

Note that SERIAL REMOTE is for future use.

- 3** To change the pin assignment of the REMOTE connector, move the cursor to CONFIGURE PARALLEL and press the ENT button.
To resume the factory-set pin assignment, move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-32.)
The following display appears.

REMOTE CONTROL MENU WARNING !! HARDWARE CHANGE REQUIRED PLEASE CONSULT MANUAL PRESS ENT TO CONFIRM OR ESC TO QUIT
--

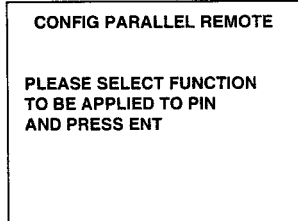
Hardware Change

When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

- 4** Press the ENT button again to confirm the mode change in step 3. When STANDARD PARALLEL has been selected in step 3, the selected mode is now activated and the monitor returns to normal status.
When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.

CONFIG PARALLEL REMOTE ■ PIN 1 MONO PIN 2 INPUT SEL 2/1 PIN 4 SYNC PIN 5 PIN 6 VITC PIN 7 MARKER MOVE SAVE AND APPLY PIN 3 TALLY PIN 8 GND SELECT AND PRESS ENT

- 5** Move the cursor with the $\downarrow$ button to the pin whose assignment is to be changed, then press the ENT button.
The following message appears.



- 6** Press the button on the front panel or in the drawer (listed on page 1-33) whose function is to be assigned to the pin selected in step 5.
- 7** Press the ENT button.

Repeat steps 5, 6 and 7 for the other pins as desired.

- 8** When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.
- 9** Press the LOCAL/REMOTE button to set the monitor to the remote control mode.

To cancel the operation

Press the ESC button before pressing the ENT button in step 8.

Notes

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.



Section 1 Operation

1-4-7. Defining the Monitor Configuration

In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

OPTION INSTALLATION: To specify the installed optional boards.

D1 CONFIGURATION: To specify the system in which D-1 signals are to be received.

COMPONENT OFFSET: To set the setup level for component signals

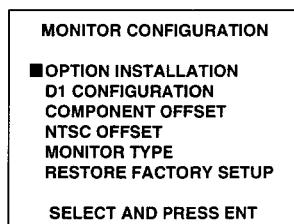
NTSC OFFSET: To set the setup level for NTSC signals.

MONITOR TYPE: To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

To start with the MONITOR CONFIG menu operation

- 1** Press the MENU button to display the initial menu.
- 2** Press the ↓ button until the cursor reaches MONITOR CONFIG, then press the ENT button.
The MONITOR CONFIGURATION menu is displayed.



To specify the installed optional boards

- 1** Set the cursor to OPTION INSTALLATION on the MONITOR CONFIGURATION menu and press the ENT button.
The OPTION INSTALLATION menu 1 is displayed.

OPTION INSTALLATION 1	
■ AUTO SETUP	YES
D1 OPTION	YES
D2 OPTION	YES
NTSC DECODER	YES
NTSC COMB ADP	YES
PAL DECODER	YES
PAL COMB ADP	YES
OTHER OPTIONS	
SELECT AND PRESS ENT	

- 2** By pressing the ↓ button, move the cursor to the board for which the YES/NO setting must be changed, and press the ENT button.
YES must be displayed for the installed board and NO for uninstalled boards. Pressing the ENT button toggles the YES/NO setting.

Repeat step 2 for the other boards as necessary.

- 3** Move the cursor to OTHER OPTIONS and press the ENT button.
The OPTION INSTALLATION menu 2 is displayed.

OPTION INSTALLATION 2	
■ PAL-M DECODER	YES
SECAM DECODER	YES
RGB/COMP O/P	YES
VITC BOARD	YES
SAFE AREA	YES
BLACK GENER	YES
OTHER OPTIONS	
SAVE AND APPLY	
SELECT AND PRESS ENT	

- 4** Set YES/NO for the boards listed in menu 2 in the same manner as with menu 1.
- 5** When the YES/NO setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Section 1 Operation

To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES.

- 1 Move the cursor with the $\downarrow$ button to D1 CONFIGURATION on the MONITOR CONFIGURATION menu and press the ENT button.
The D1 CONFIGURATION menu is displayed.

D1 CONFIGURATION

☒ PAL *
☐ NTSC
☐ SECAM

SPECIFY SETTING OF LOCAL
SWITCH ON BV BOARD

SELECT AND PRESS ENT

The asterisk indicates the current setting.

- 2 Move the cursor with the $\downarrow$ button to the system matching setting of the local switch on the BV board.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level for component signals

- 1 Move the cursor with the $\downarrow$ button to COMPONENT OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The COMPONENT OFFSET menu is displayed.

COMPONENT OFFSET

☒ N-10 *
☐ BETACAM 0
☐ BETACAM 7.5

SELECT AND PRESS ENT

The asterisk indicates the current setting.

- 2 Move the cursor with the $\downarrow$ button to the appropriate setup level.
N-10: When supplying the 100/0/100/0 component signals.
BETACAM 0: When supplying the 100/0/75/0 component signals.
BETACAM 7.5: When supplying the 100/7.5/75/7.5 component signals.

- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level of NTSC signals

- 1 Move the cursor with the ↓ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The NTSC OFFSET menu is displayed.

NTSC OFFSET

■ 0 PERCENT *

7.5 PERCENT

SELECT AND PRESS ENT

The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the appropriate setup level.
0 PERCENT: When supplying 0 IRE NTSC signals.
7.5 PERCENT: When supplying the 7.5 IRE NTSC signals.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To define the model of your monitor

- 1 Move the cursor with the ↓ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button.
The MONITOR TYPE menu is displayed.

MONITOR TYPE

■ BVM-1311/1411 *

BVM-1911/2011

BVM-1316/1416

BVM-1916/2016

SELECT AND PRESS ENT

The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the model name of your monitor.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

Section 1 Operation

To restore the factory setup

- 1 Move the cursor with the $\downarrow$ button to RESTORE FACTORY SETUP in the MONITOR CONFIGURAITON menu and press the ENT button.

The following message is displayed.

RESTORE FACTORY SETUP

WARNING !!
THIS WILL DESTROY ALL
MANUALLY ENTERED DATA
AND CONFIGURATIONS

PRESS ENT TO CONFIRM
OR ESC TO QUIT

- 2 Press the ENT button.
All the changed menu options returns to the factory-set conditions.

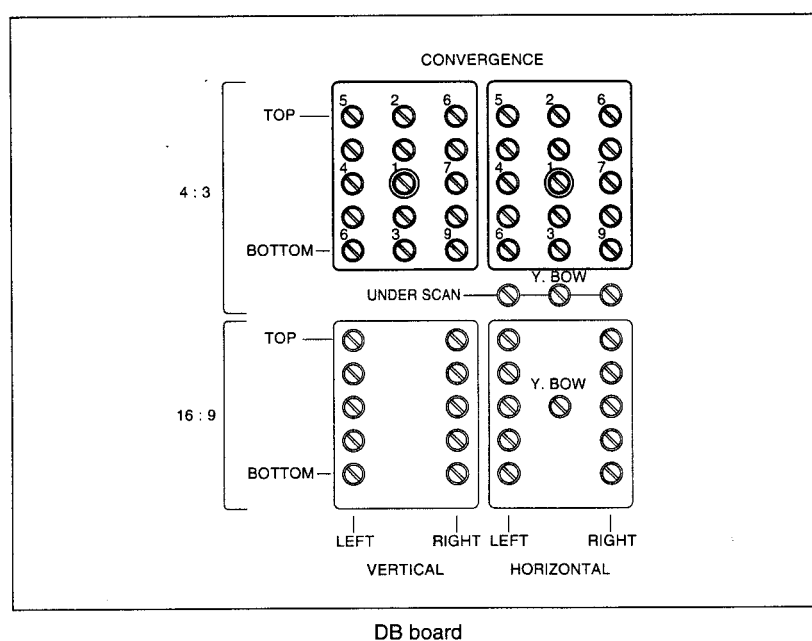
To cancel the restoration, press the ESC button before pressing the ENT button in step 2.

1-5. Convergence Adjustments

For the convergence adjustment, use the CONVERGENCE controls on the DB board inside the left drawer. Use the supplied screwdriver to turn these controls.

1-5-1. Convergence of a 4:3-Aspect Normal Picture

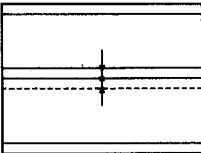
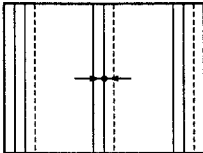
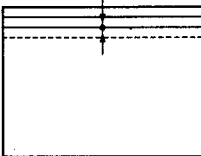
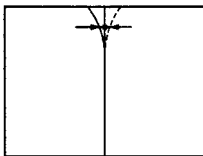
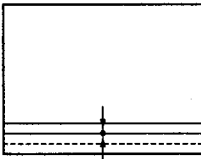
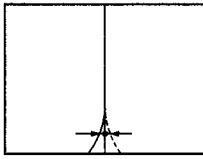
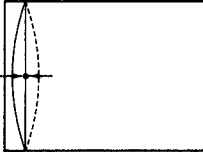
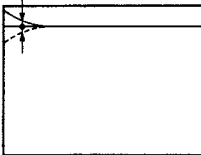
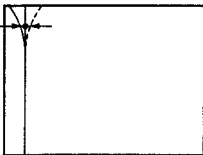
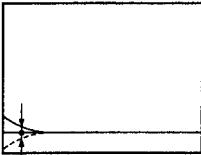
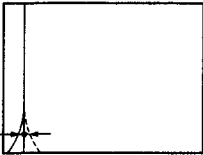
Adjust the convergence of 4:3 scan mode using the 4:3 controls.

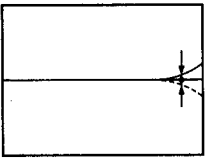
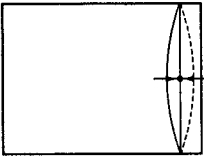
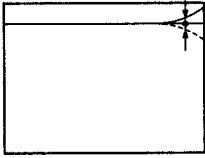
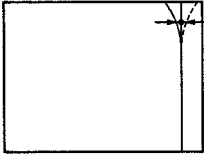
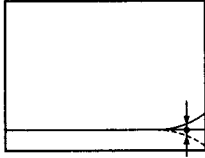
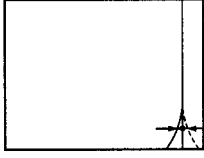
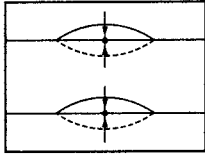


- Numbers 1 to 9 in the illustration above refer to the sequence of operations.
- The HORIZONTAL controls adjust the convergence horizontally, and the VERTICAL controls adjust it vertically.
- When adjusting the convergence, observe the portion of the screen indicated by arrows in the figures on the subsequent pages. The red and blue beams move symmetrically to the green beam.

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Adjust the convergence at the corresponding portion of the screen, as follows.

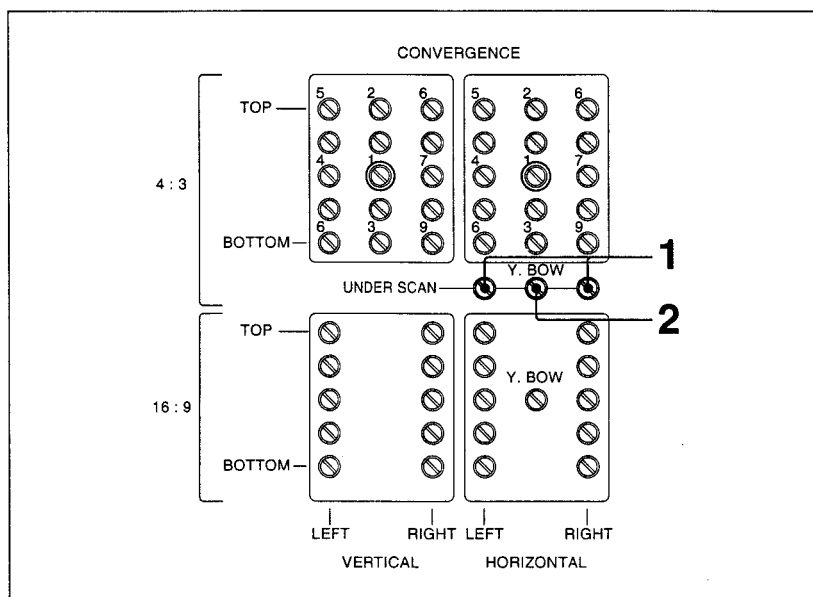
VERTICAL		HORIZONTAL	
1	At center		
2	At center top		
3	At center bottom		
4	At left center		
5	At top left		
6	At bottom left		

VERTICAL	HORIZONTAL
7 At right center 	
8 At top right 	
9 At bottom right 	
10 Adjust the convergence between the center and top and between the center and bottom on the screen as required. 	

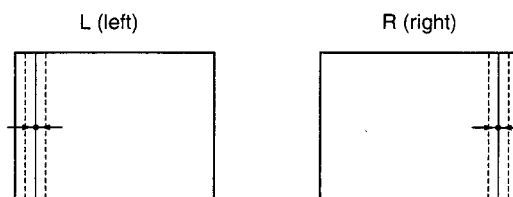
Section 1 Operation

1-5-2. Convergence of a 4:3-Aspect Underscanned Picture

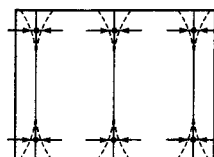
Adjust the convergence of 4:3 underscan mode using the 4:3 UNDERSCAN and 4:3 UNDERSCAN Y. BOW controls after the convergence adjustment of normal scan mode is completed.



- 1 Adjust the horizontal convergence with the 4:3 UNDERSCAN controls.

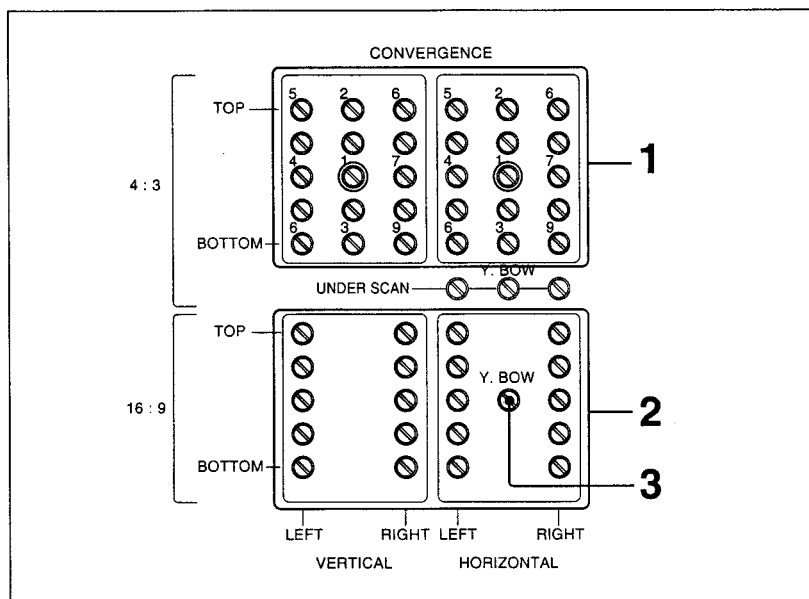


- 2 Adjust the horizontal convergence at the corners of the picture with the 4:3 UNDERSCAN Y. BOW control.



1-5-3. Convergence of a 16:9-Aspect Picture

Adjust the convergence of 16:9 scan mode.



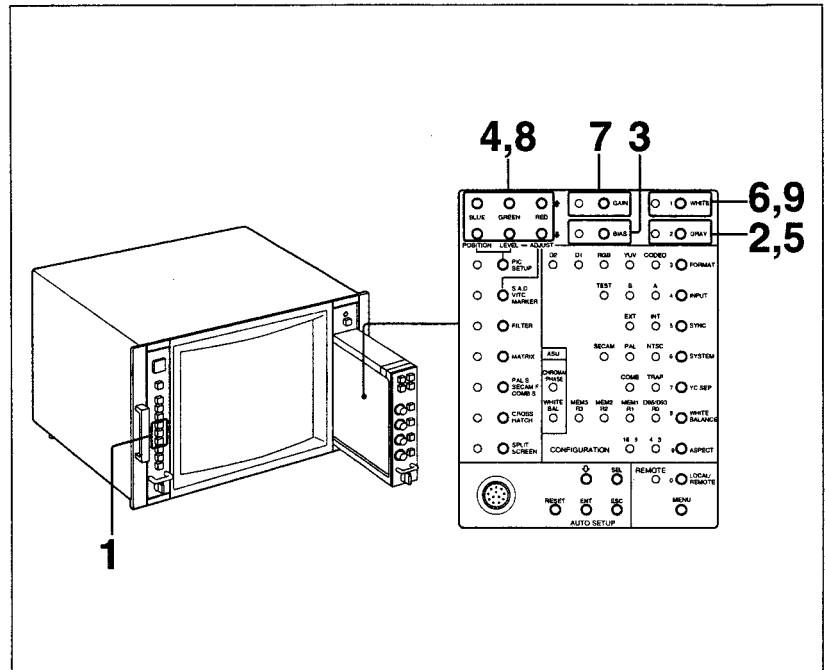
- 1** Adjust the convergence at the center of the screen following the procedure mentioned in the "1-5-1. Convergence of a 4:3 aspect normal picture."
- 2** Adjust the convergence at the right and left portions of the screen using the 16:9 controls.
- 3** Adjust the horizontal convergence at the corners using the 16:9 Y. BOW control.

Section 1 Operation

1-6. Picture Adjustments

1-6-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



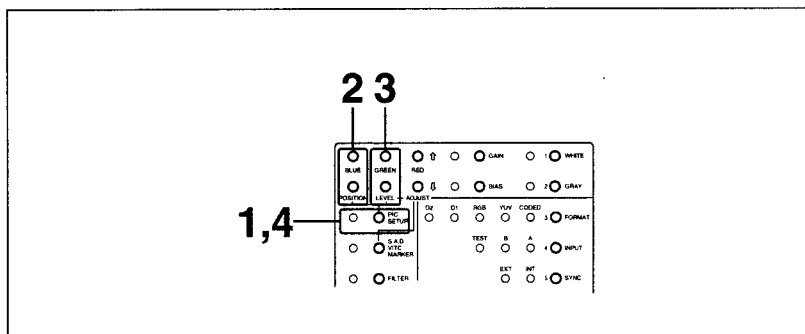
- 1** Display a test signal on the screen.
- 2** Press the GRAY button.
The associated lamp lights and the internal gray signal is displayed on the screen.
- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- 5** Press the GRAY button again.
The associated lamp goes off and the internal gray signal disappears.
- 6** Press the WHITE button.
The associated lamp lights and the internal 100% white signal is displayed on the screen

- 7** Press the GAIN button.
The associated lamp lights.
- 8** Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons $\uparrow$ or $\downarrow$.
- 9** When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

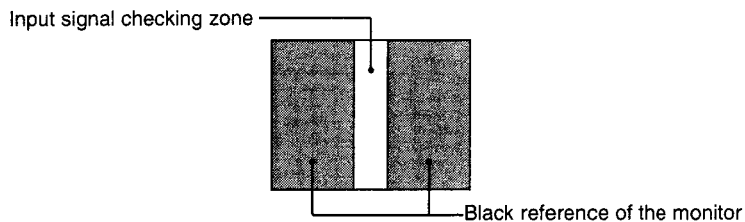
For white balance adjustment using a color analyzer or equivalent, see Section 2.

1-6-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



- 1** Press the PIC SETUP button.
The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.



- 2** Press the POSITION buttons $\uparrow$ or $\downarrow$ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.
- 3** Press the LEVEL buttons $\uparrow$ or $\downarrow$ to match the brightness of the black reference area with that of the input black signal.
- 4** Press the PIC SETUP button again.

Section 1 Operation

1-7. Specifications

General

System	BVM-1311: 525 lines per picture, 60 fields per second interlaced, NTSC BVM-1411P: 625 lines per picture, 50 fields per second interlaced, PAL
CRT	Super Fine Pitch Trinitron 0.25 mm aperture grille, 90-degree deflection, 36 mm dia. in-line gun Effective picture size: 200.3 × 267.2 mm (h/w) (8 × 10 ⁵ / ₈ inches) 330.8 mm (13 inch) picture measured diagonally
Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 minutes to meet specifications
Anode voltage	Properly adjusted HV 25 kV at zero beam current
Power consumption	Typical: 142 W Maximum: 160 W
Power requirements	BVM-1311: 100-120 V AC ±10%, 50/60 Hz BVM-1411P: 220-240 V AC ±10%, 50/60 Hz
Dimensions	426 × 281.5 × 489 mm (w/h/d) (16 ⁷ / ₈ × 11 ¹ / ₈ × 19 ³ / ₈ inches) including projecting parts and controls
Mass	32 kg (70 lb 9 oz)

Inputs/outputs

Video inputs	BNC type (5 inputs with 5 loop-through outputs) VIDEO A/B, TEST, R/G/B: 0.714 Vp-p noncomposite or 1 Vp-p composite ±6 dB positive, high-impedance Y: Composite, 1.0 Vp-p ±6 dB, high-impedance R-Y/B-Y: 0.7 Vp-p ±6 dB, high-impedance
Sync input	EXT SYNC: BNC type (1 input with 1 loop-through output) 1 to 8 Vp-p negative, high-impedance
Input return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Video outputs	DECODER OUT: BNC type (3) Output decoded signals only when BKM-1440 is installed.
Remote control	REMOTE: 10-pin connector (1)
Probe receptacle	12-pin connector (1)

Video signal

Luminance channel (RGB and composite signals)

Differential gain	Within 2% for a luminance from 0 to 138 cd/m ²
Differential phase	Within 2° for a luminance from 0 to 138 cd/m ²
Frequency response	Monochrome mode: 100 Hz to 8 MHz ± 1 dB (aperture correction at 0) Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-1311) or 4.43 MHz (BVM-1411P) region RGB mode: 100 Hz to 10 MHz ± 1 dB

Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	$\pm 1^\circ$ (standard input signal)
Phase control range	More than $\pm 15^\circ$ (standard input signal)
Chroma gain control range	More than ± 6 dB

Chrominance/luminance

Time error	Less than 30 nsec
Gain error	Less than 5%
Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)

DC restoration (RGB and composite signals)

Back porch type
Back porch level: Within 1% of peak luminance, 10% to 90% (average picture level)

Synchronization

AFC time constant	0.5 msec (fast), 2 msec (normal) or 7 msec (slow)
Line pull range/line hold range	More than ± 500 Hz at 0.5 msec time constant
Vertical blanking time	Normal: Within 1 msec. Underscan: Within 0.8 msec.
Horizontal retrace time	Within 10 μ sec

Section 1 Operation

Picture performance

Normal scan	5% overscan of CRT effective screen area (adjustable range more than $\pm 15\%$)
Underscan	3% underscan of CRT effective screen area (adjustable range more than $\pm 15\%$)
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 0.5% of the picture height, out of area 1%
Color temperature	D6500, adjustable to other color temperatures
Nominal chromaticity coordinates	BVM-1311: SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-1411P: EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

	Error: Less than ± 0.005
Convergence error	Central area: Less than 0.3 mm Periphery: Less than 0.6 mm
Calibrated constant	138 cd/m ² at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0% to 100% APL at 138 cd/m ² peak luminance
Scan delay	Horizontal: Approx. 1/4 line Vertical: Approx. 1/2 field
Resolution	More than 700 TV lines (center, at 138 cd/m ² luminance)

Environment

Operating temperature	0° C to 40° C (32° F to 104° F)
Optimum temperature range	20° C to 30° C (68° F to 86° F)
Humidity	0 to 90%
Altitude	Approx. 3,050 m (10,000 feet) max.

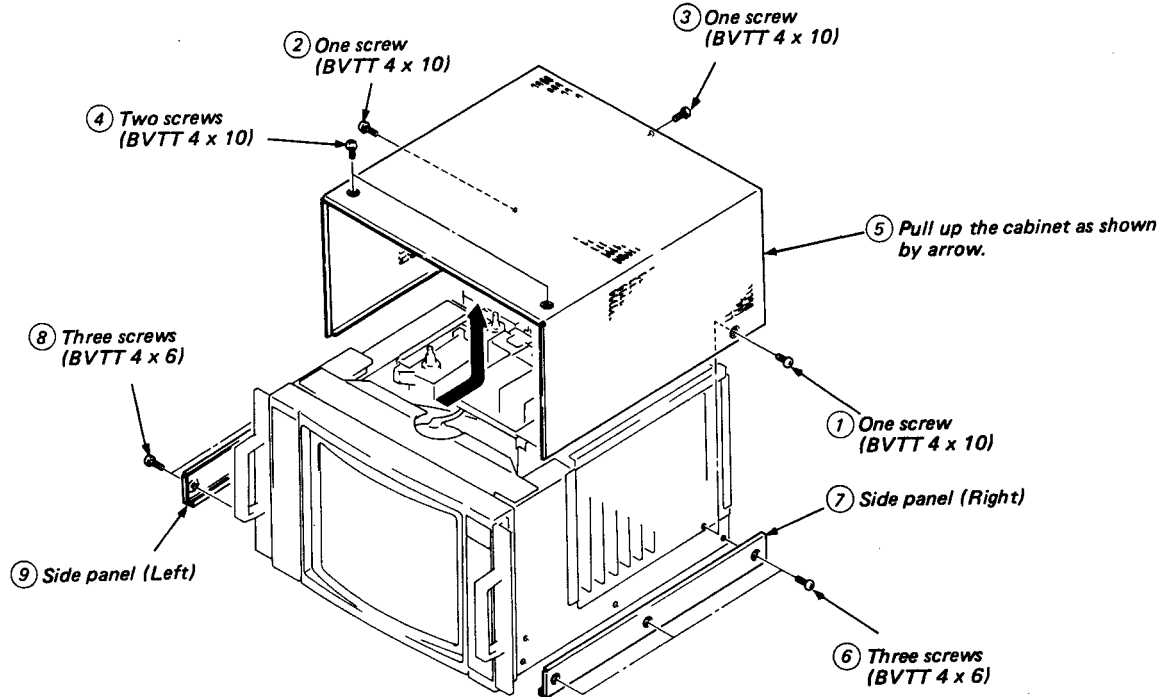
Supplied accessories

AC power cord (1)
Cord stopper (1)
Screwdriver (1)
Drawer keys (2)
Extension board (1)
10-pin connector (1)
Fuses (2)
Tally number plates (1 set)
Operation and maintenance manual (1)

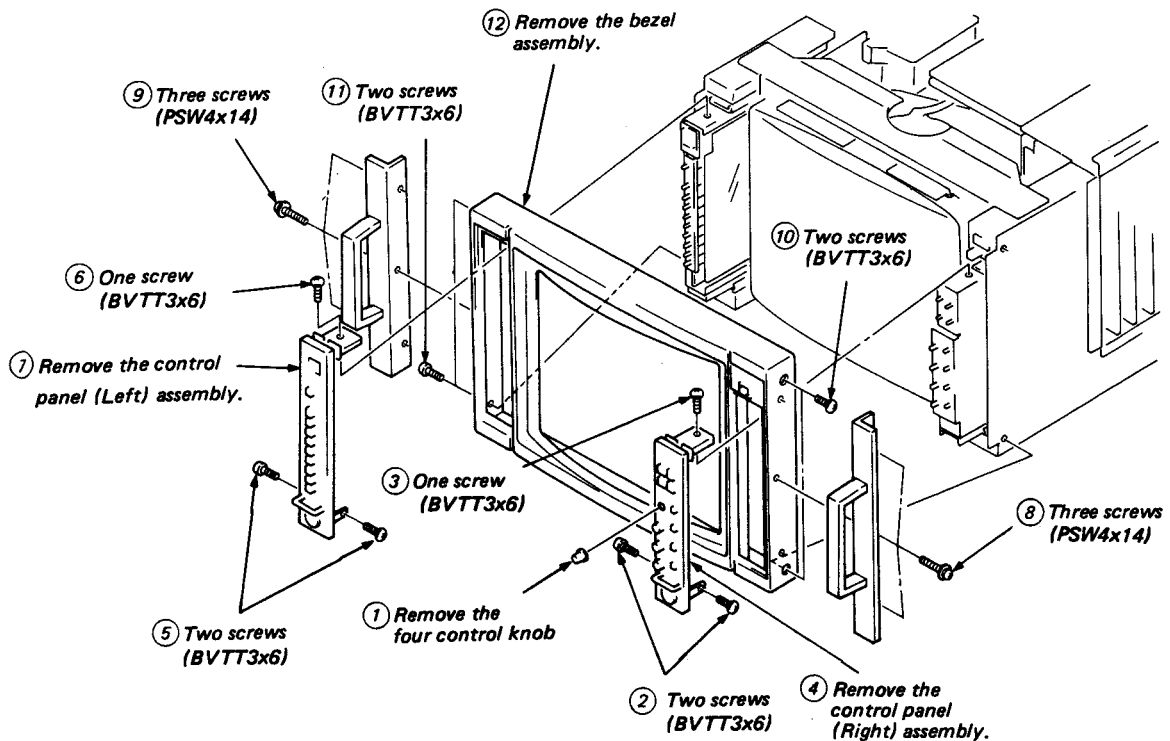
Design and specifications are subject to change without notice.

SECTION 2 DISASSEMBLY

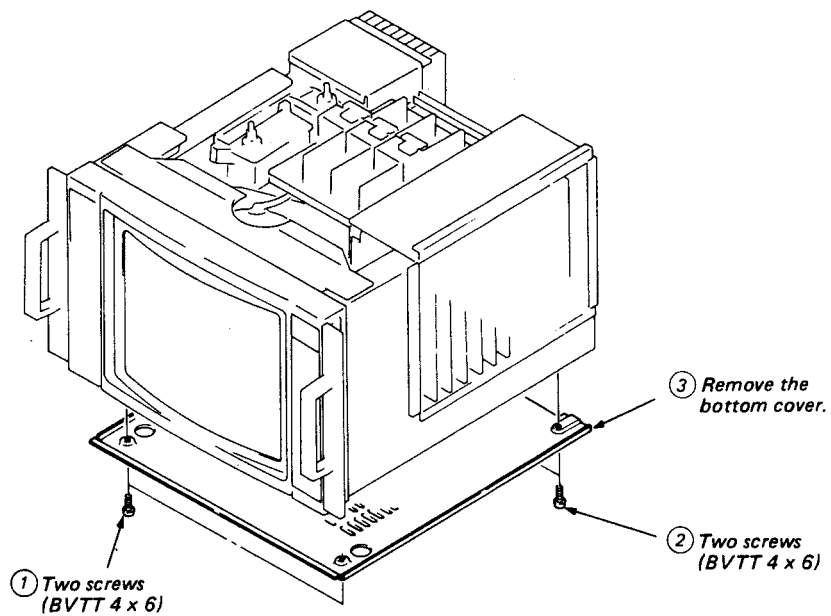
2-1. CABINET REMOVAL AND THE SIDE PANELS



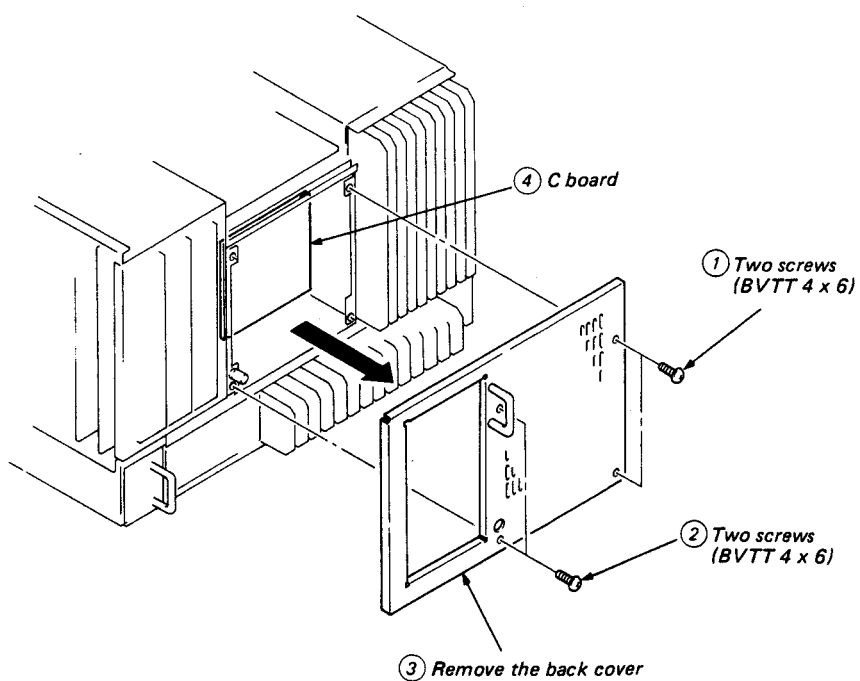
2-2. BEZEL ASSEMBLY REMOVAL



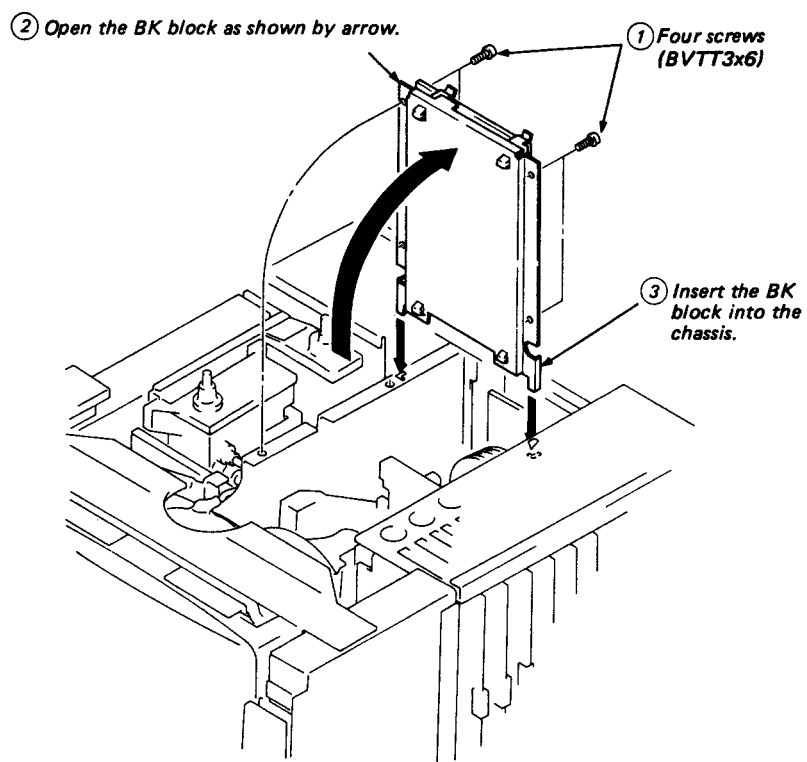
2-3. BOTTOM COVER REMOVAL



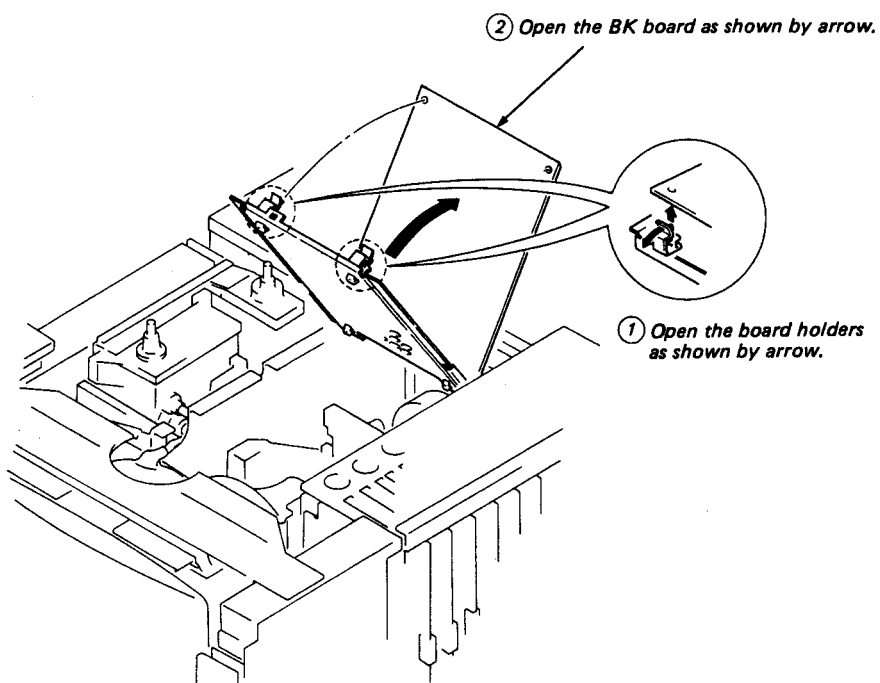
2-4. CHECK OF C BOARD



2-5. BK BLOCK REMOVAL

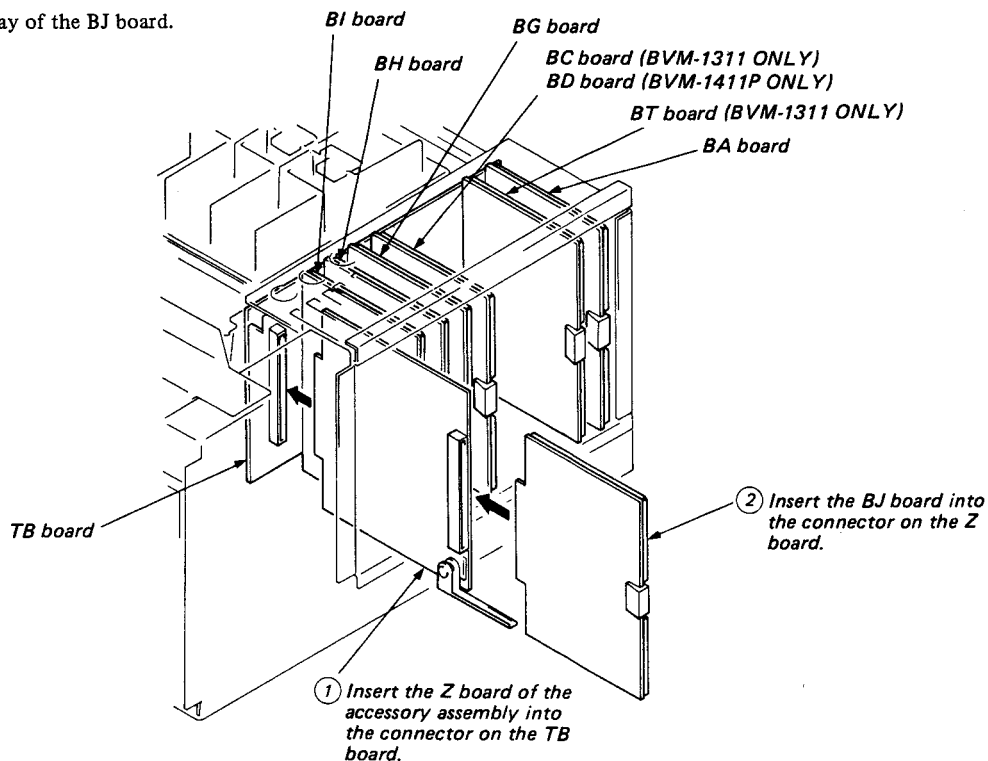


2-6. CHECK OF BK BOARD

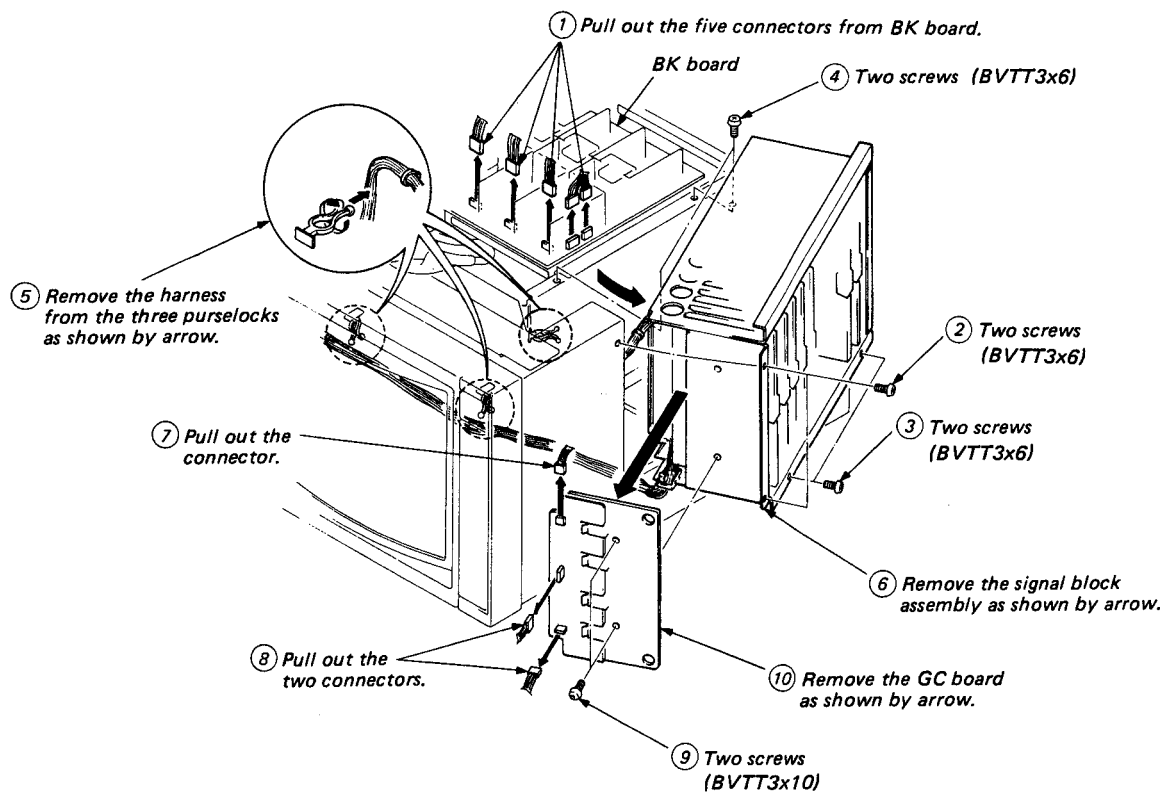


2-7. CHECK OF BA, BT, BC, BD, BG, BH, BI AND BJ BOARDS

Note: The BA, BT, BC, BG, BH, and BI boards can be checked in the same way of the BJ board.

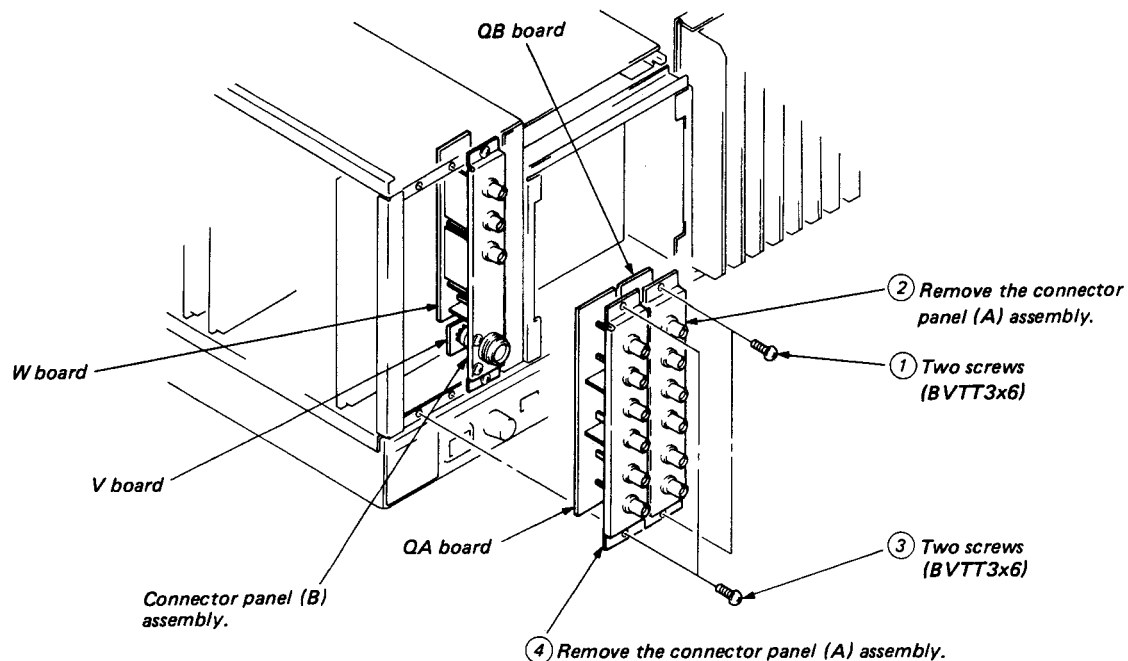


2-8. GC BOARD REMOVAL

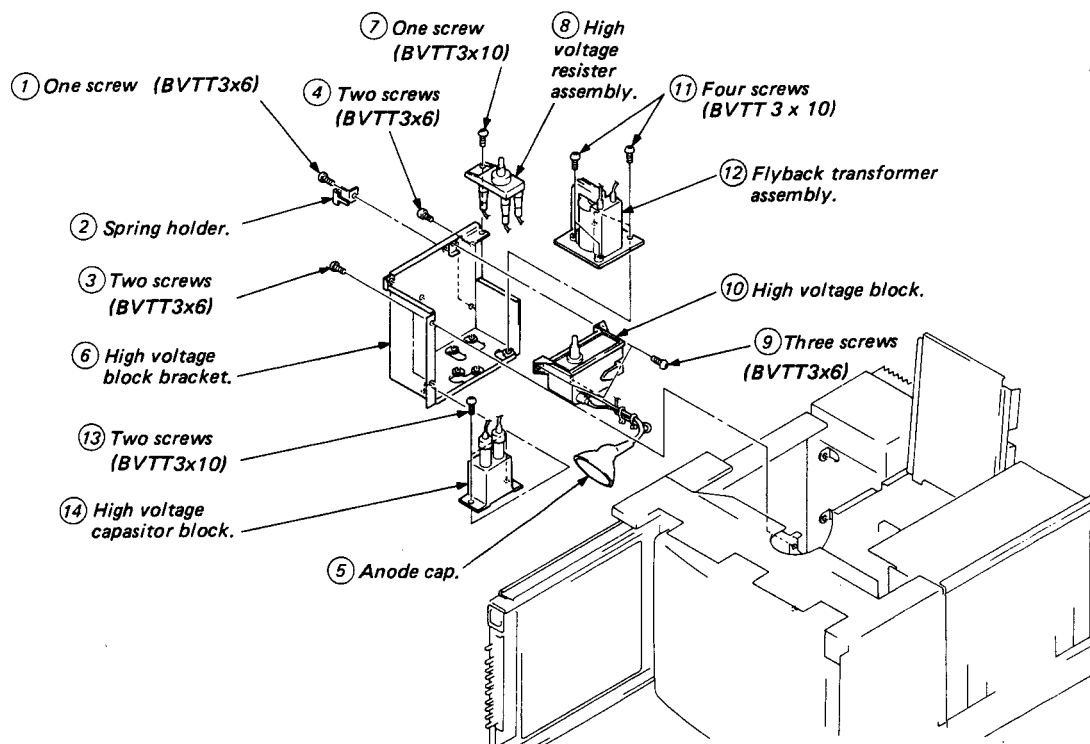


2-9. QA, W AND V BOARDS REMOVAL

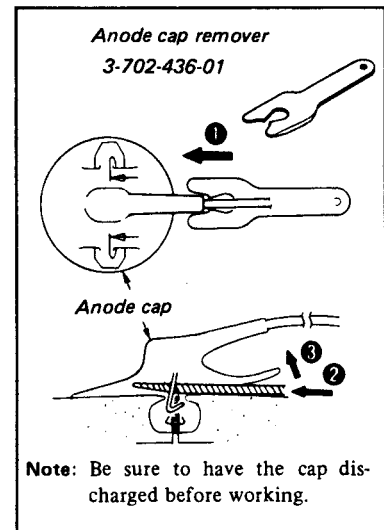
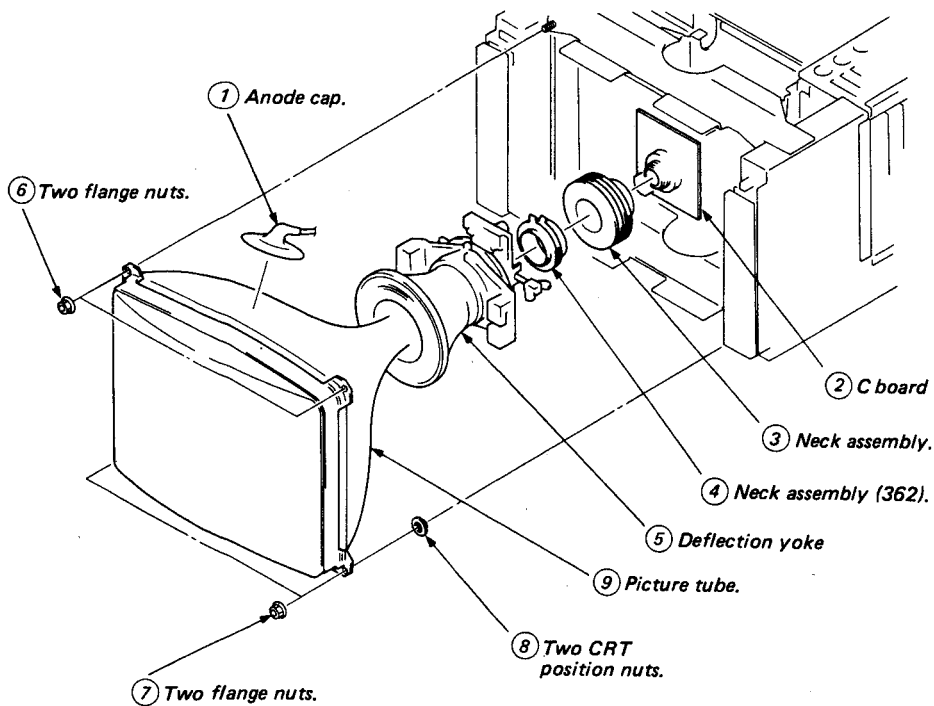
Note: Connector panel (B) assembly can be removed in the same way.



2-10. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK REMOVAL

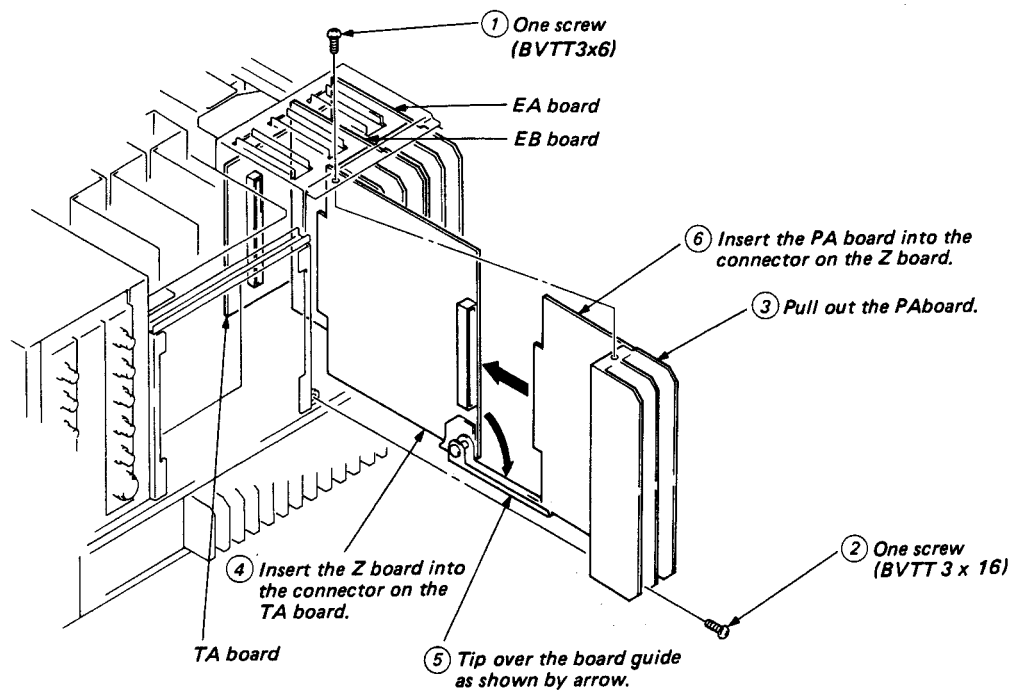


2-11. PICTURE TUBE REMOVAL



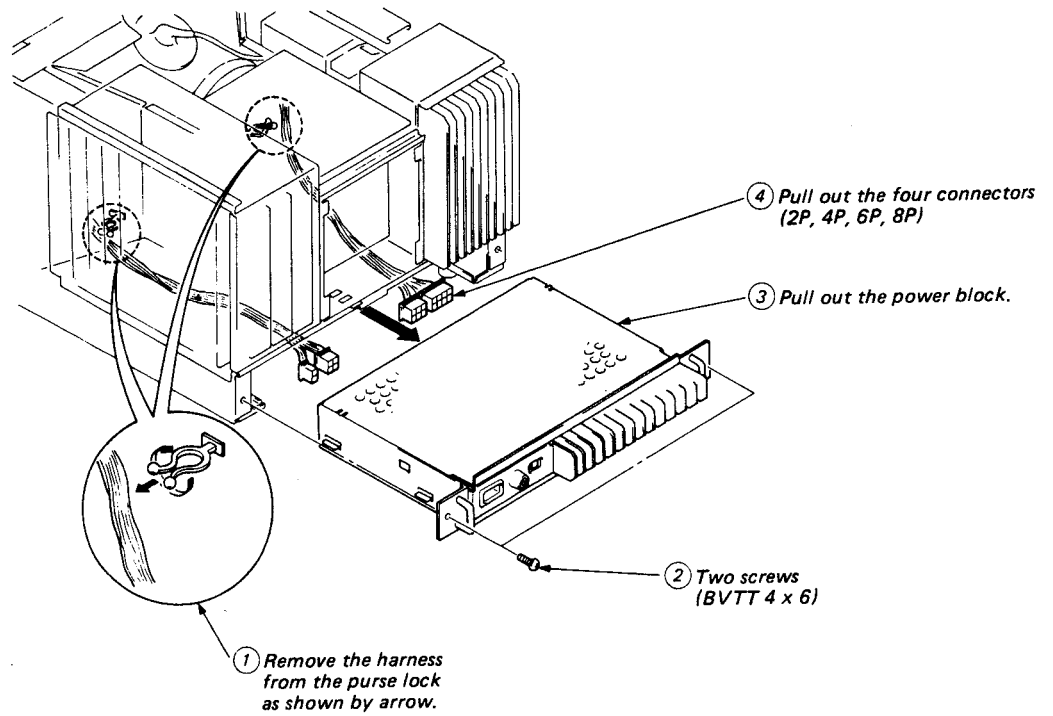
2-12. CHECKING OF PA BOARD

Note: The EA, EB boards can be checked in the same way.



2-13. POWER BLOCK ASSEMBLY REMOVAL

Note: Remove the bottom cover before the follow operations.



SECTION 3 CIRCUIT DESCRIPTIONS

3-1. QA, QB, BA BOARDS

3-1-1. Input Circuit

Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed. QB board also has same function.

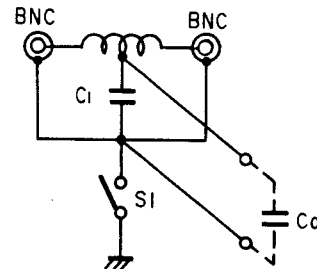


Figure 1

Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$$A = \frac{R_c}{R_i} : \text{Gain of amplifier for input A}$$

$$B = -\frac{R_c}{R_i} : \text{Gain of amplifier for input B}$$

When input $(e_c + e_i)$ is applied to input A and input $(e_c - e_i)$ to input B, then output e_o is

$$e_o = \frac{R_c}{R_i} (e_c + e_i) + (-\frac{R_c}{R_i}) (e_c - e_i) = 2 \frac{R_c}{R_i} e_i$$

This equation indicates that e_c is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

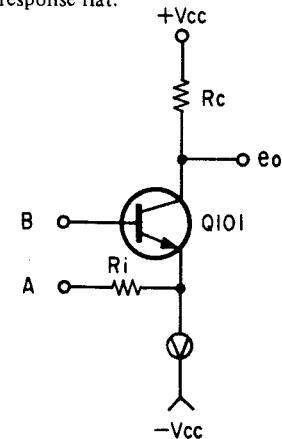


Figure 2

Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.

An inverted composite video signal or composite sync signal (e_o) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of e_o with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of e_o with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

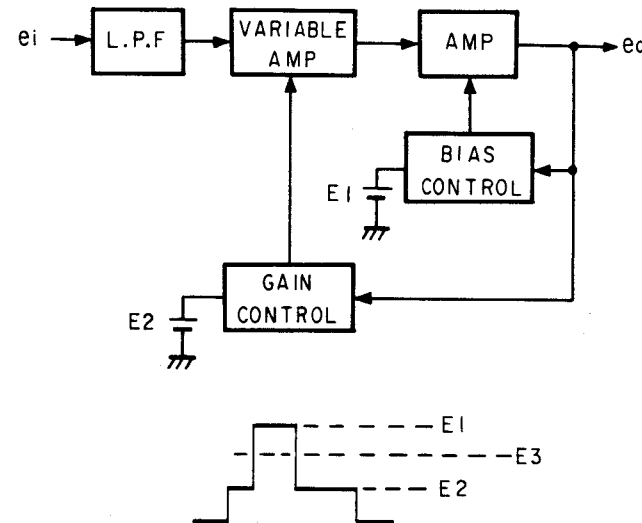


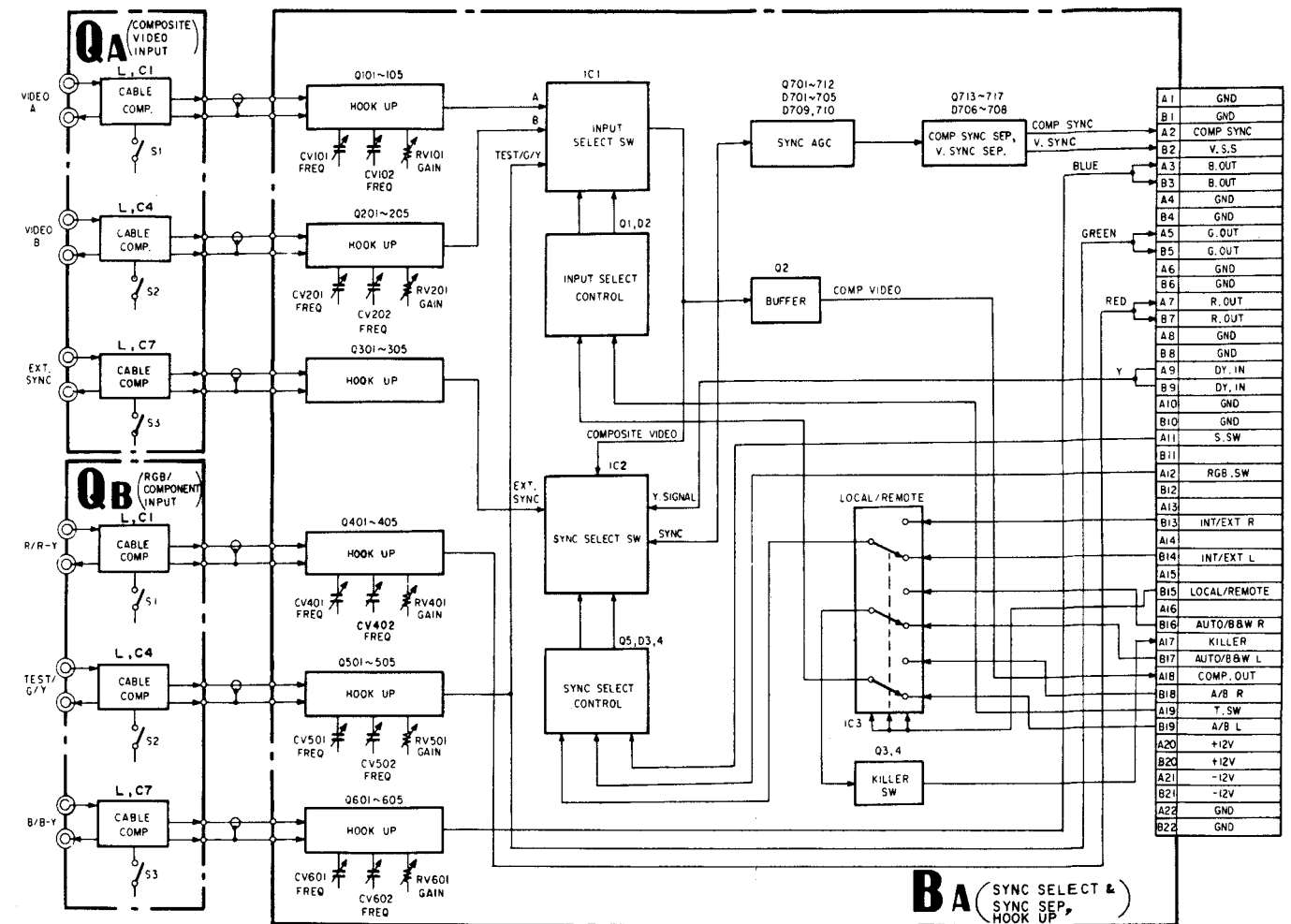
Figure 3

Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage e_o with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

BLOCK DIAGRAM OF QA, QB, BA BOARDS



3-2. BG BOARD

3-2-1. Luminance Signal Circuit

Filter SW
IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

Aperture Control
Aperture control circuit is composed of DL1(delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal: e_{r0} ,
Delayed signal by delay line: e_{r1}
Second delayed signal: e_{r2}

See Figure 4
 e_1 (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

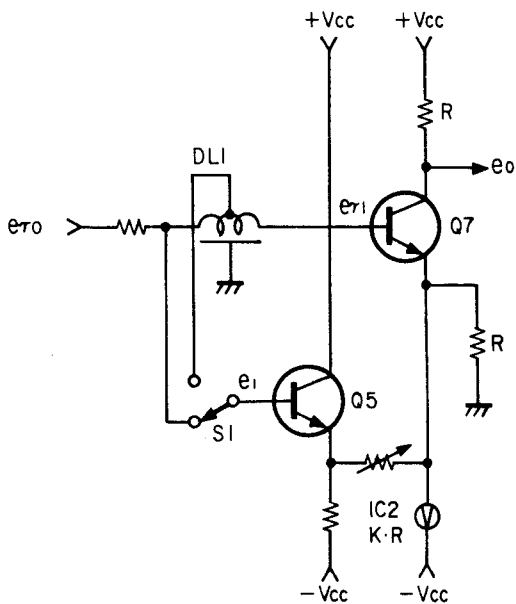


Figure 4

$$e_1 = (e_{r0} + e_{r2})/2$$

Therefore e_o is

$$e_o = -\left(\frac{e_{r1}}{K} + \frac{1}{K} \left(e_{r1} - \frac{1}{2} (e_{r0} + e_{r2}) \right) \right)$$

1st term 2nd term

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied.
Switch S1 is used for selection of boost frequency.

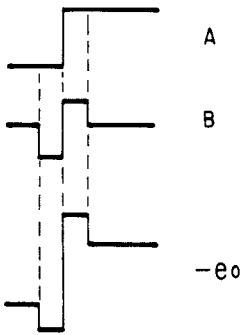


Figure 5

Y Delay, Y Buffer Amplifier
Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

R-Y Amplifier and Clamping
The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

R-Y Gain Control Amplifier
This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑫ of IC4.

AGC Pulse Generator
Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

Gain Control Amplifier for AGC Pulse
Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

Color Gain Control
AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and mached by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

3-2-5. Vector Output Circuit

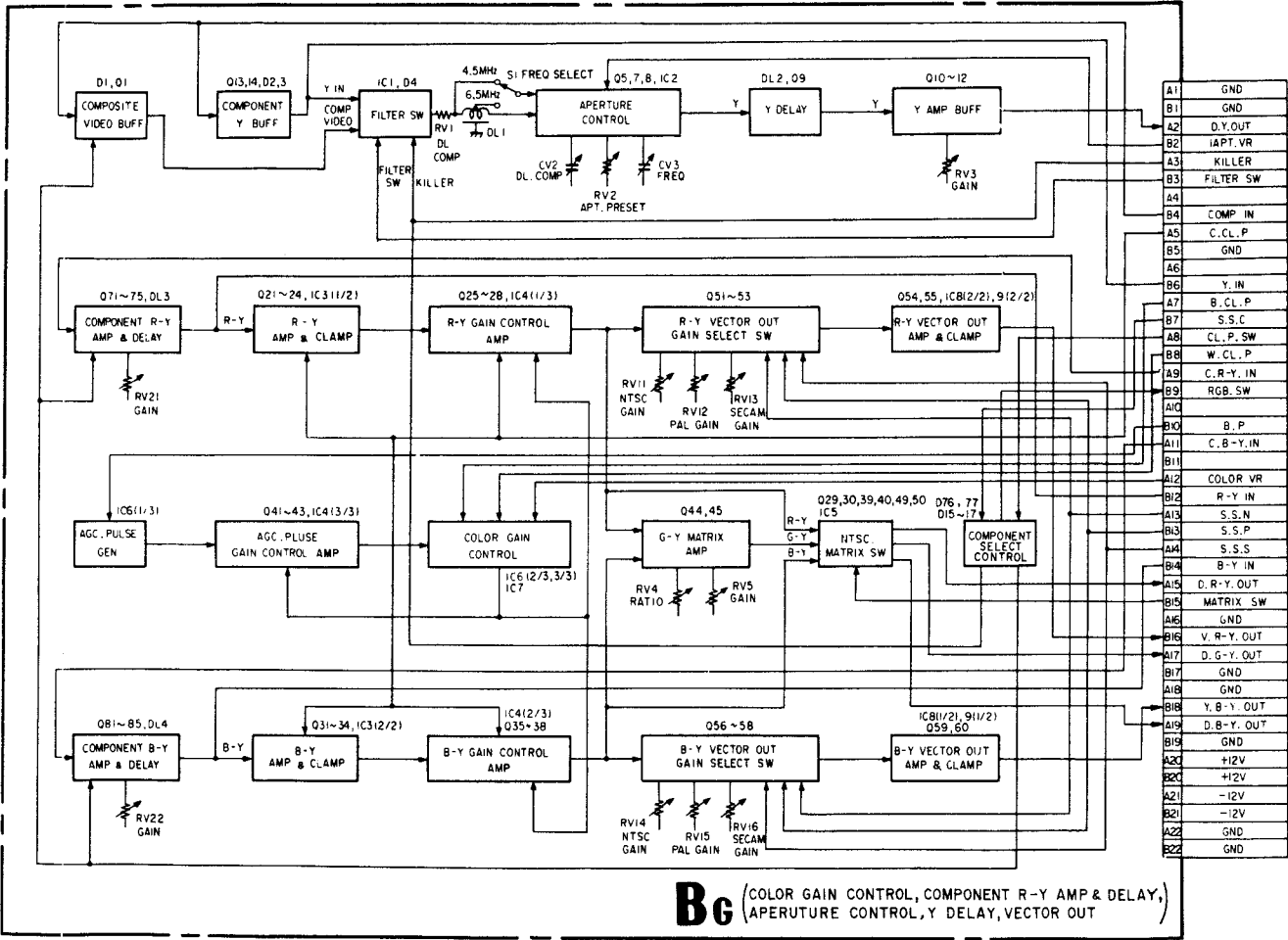
R-Y Vector Output Gain Switcher
Vector output levels are compensated for each color standards, NTSC, PAL and SECAM.

R-Y Vector Output Amplifier and Clamping
Vector output signal is amplified by IC9 (2/2) and transistor Q54 and clamped by IC8 and transistor Q55 for the suitable operation.

3-2-6. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

BLOCK DIAGRAM OF BG BOARD



3-3. BH BOARD

3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal. For color difference signals screening is made at the Horizontal Sync portion.

Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals. AGC pulse from pulse generator is inserted into Red signal for contrast control. IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

3-3-2. Contrast Control, Brightness Control, Peak Limiter

Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin ④ of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

Red limiter (Same as Green and Blue)

When excess input signal comes in, amplitude is limited by the limiter composed of transistors Q104 and Q105.

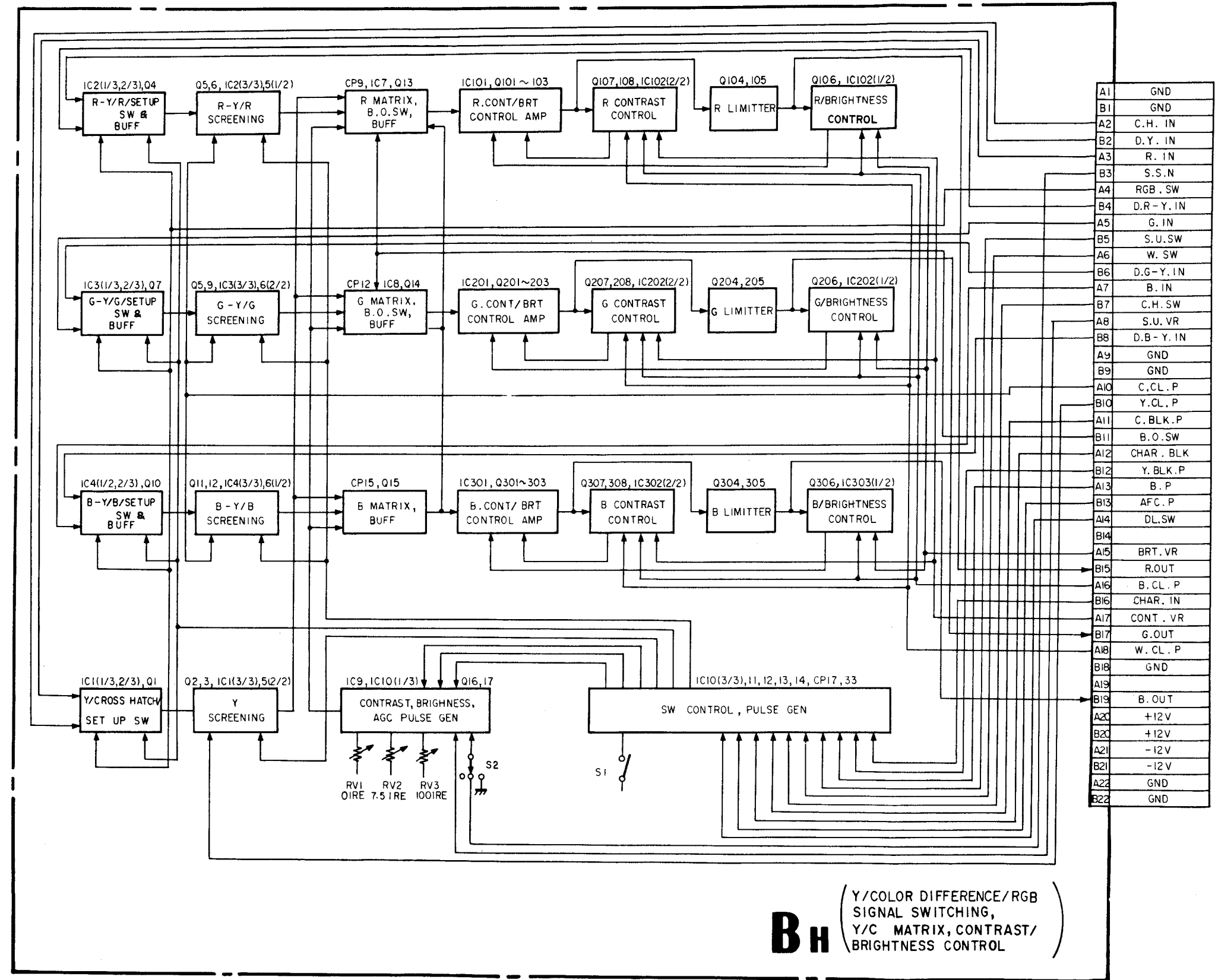
Red Contrast Control

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108. Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2). Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD



3-4. BI BOARD

3-4-1. Red Screen SW, AGC Pulse Insertion (Same as Green and Blue)

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

3-4-2. Red Limiter, Gain Bias Control Amplifier

This limiter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier' (See section of BH board)

3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.

(This time, black level of VIDEO OUTPUT will be -90V DC.)

RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin ③ of IC103.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

3-4-4. Red Cathode Current Detection, Red G1 Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.

The signal for G1 BIAS control is fed to base of the transistor Q11 from RED G1 BIAS control circuit. (Same as G and B)

Only one of the highest voltages among the base voltages of transistors Q11-Q13 is turned on and is compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q105 located in PA board so that Transistor Q105 in PA board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of transistor Q14 (reference voltage) is set so that the voltage of Black level at G1 electrode may be -120V DC and maintain Ekco (cut off voltage) -120V constant.

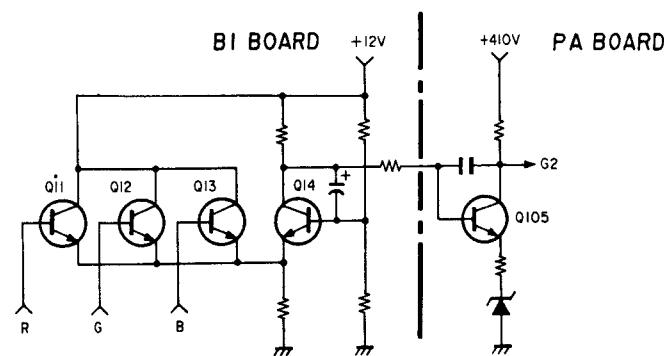
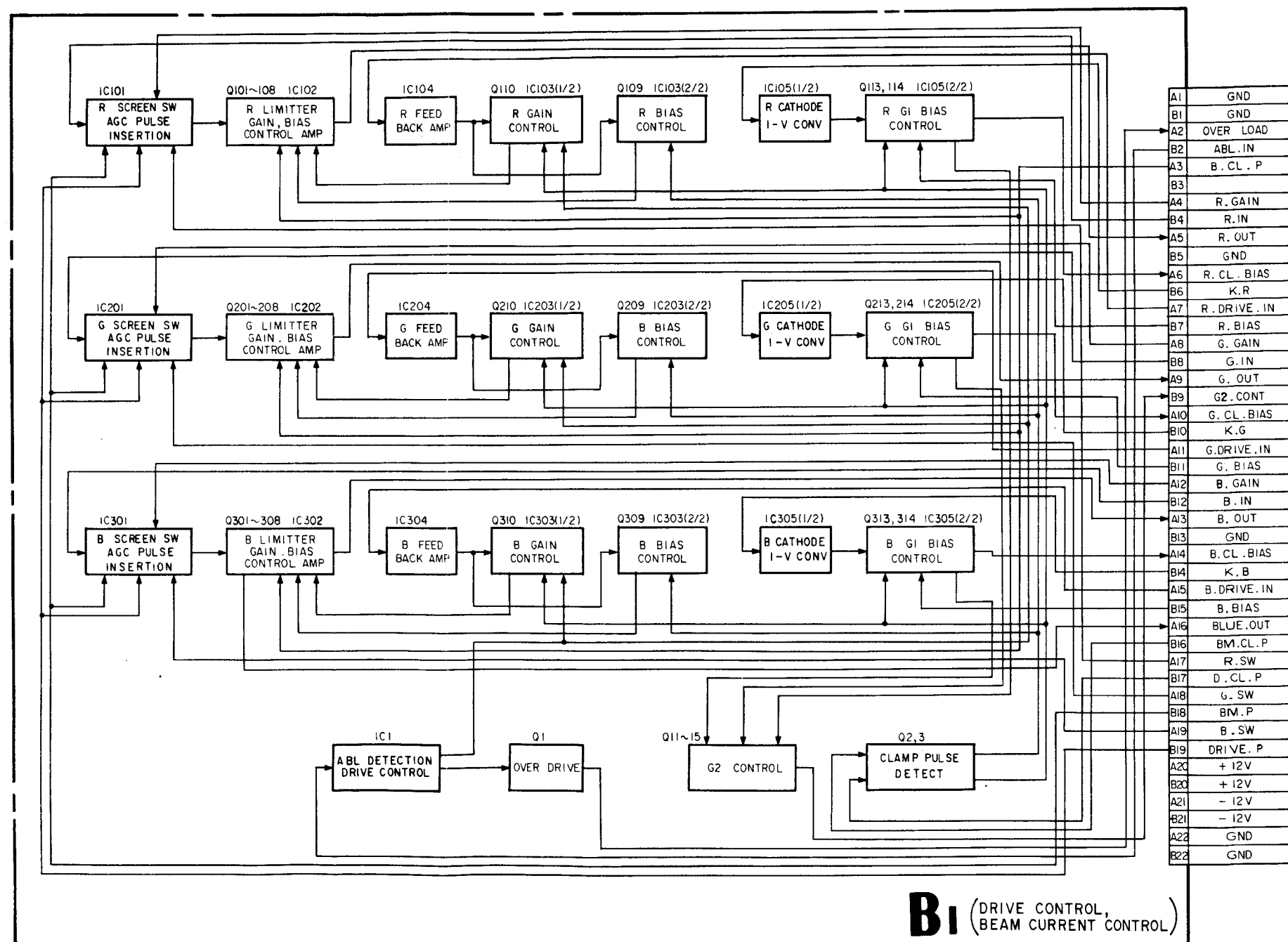


Figure 6

BLOCK DIAGRAM OF BI BOARD



3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.

Also H sync which has constant pulse width is made from 1H sync.

3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.

When there is no incoming signal, trigger pulse is generated by vertical counter (384H).

When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.

Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.

And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.

The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.

And flyback pulse is counted down to generate horizontal lines.

3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W. CL.P) are generated here.

3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.

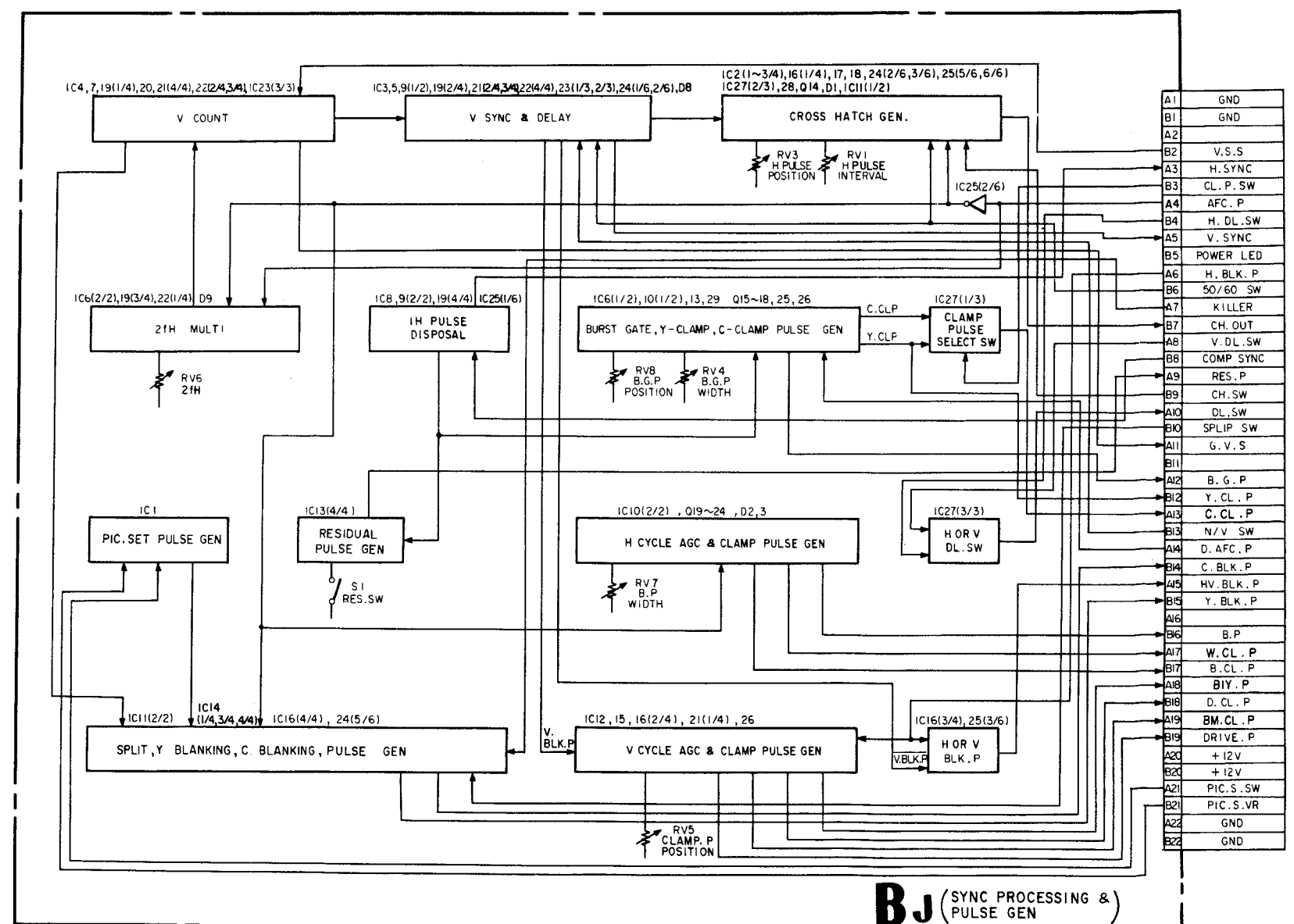
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.

Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

3-5-11. Others

Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P or Y.CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD



TIMING CHART OF MAJOR PULSE (BJ BOARD)

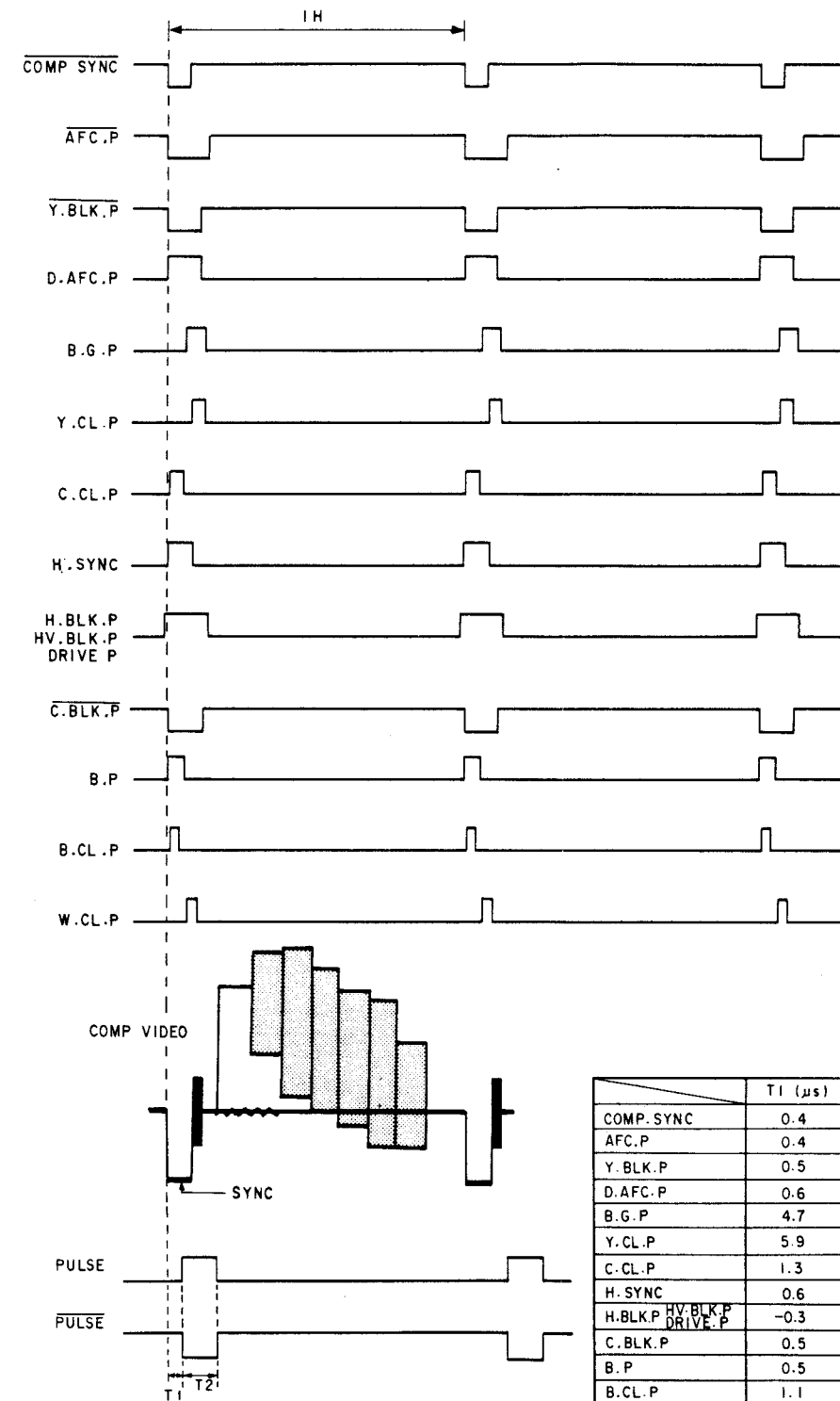


Figure 7

FIELD 1 VERTICAL BLANKING

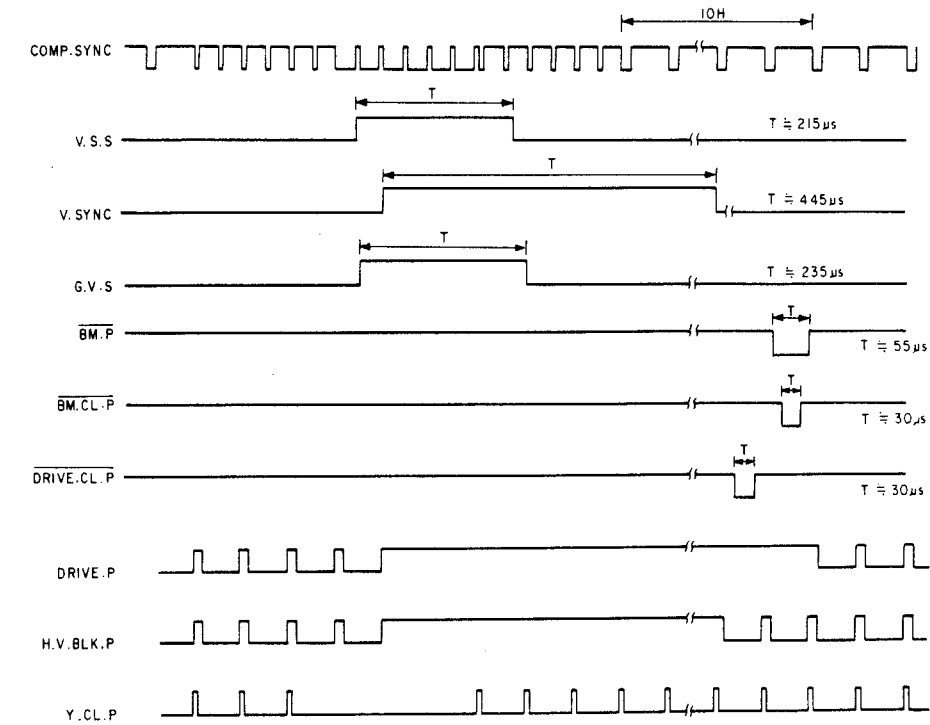


Figure 8

FIELD 2 VERTICAL BLANKING

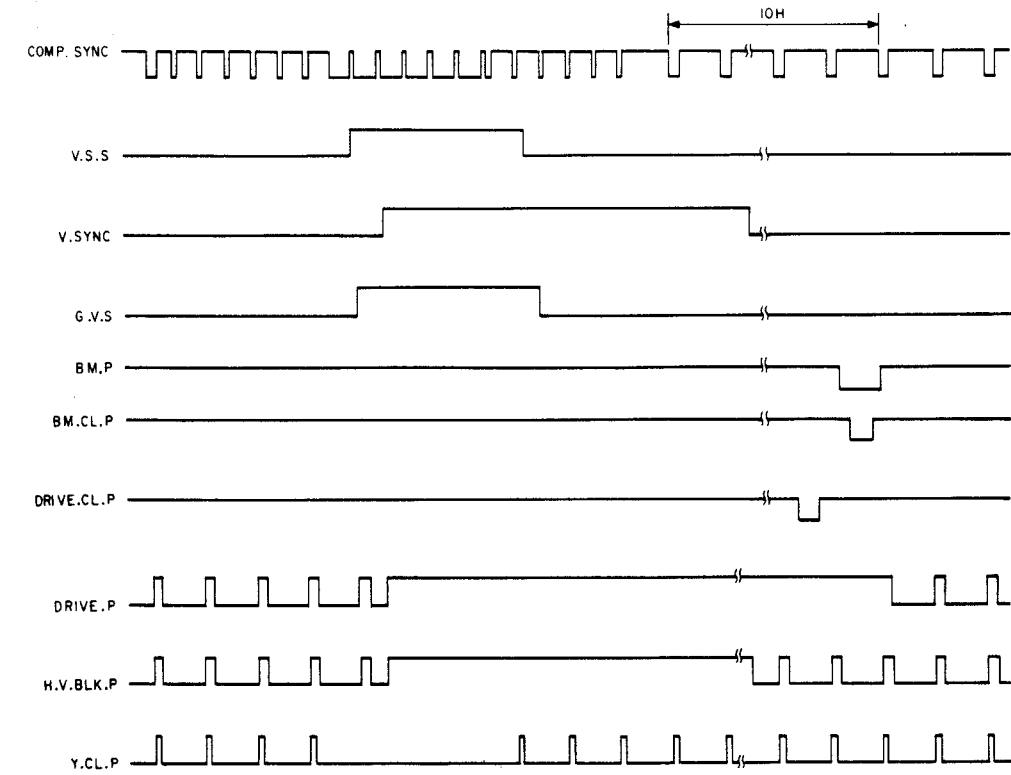


Figure 9

3-6. BK BOARD

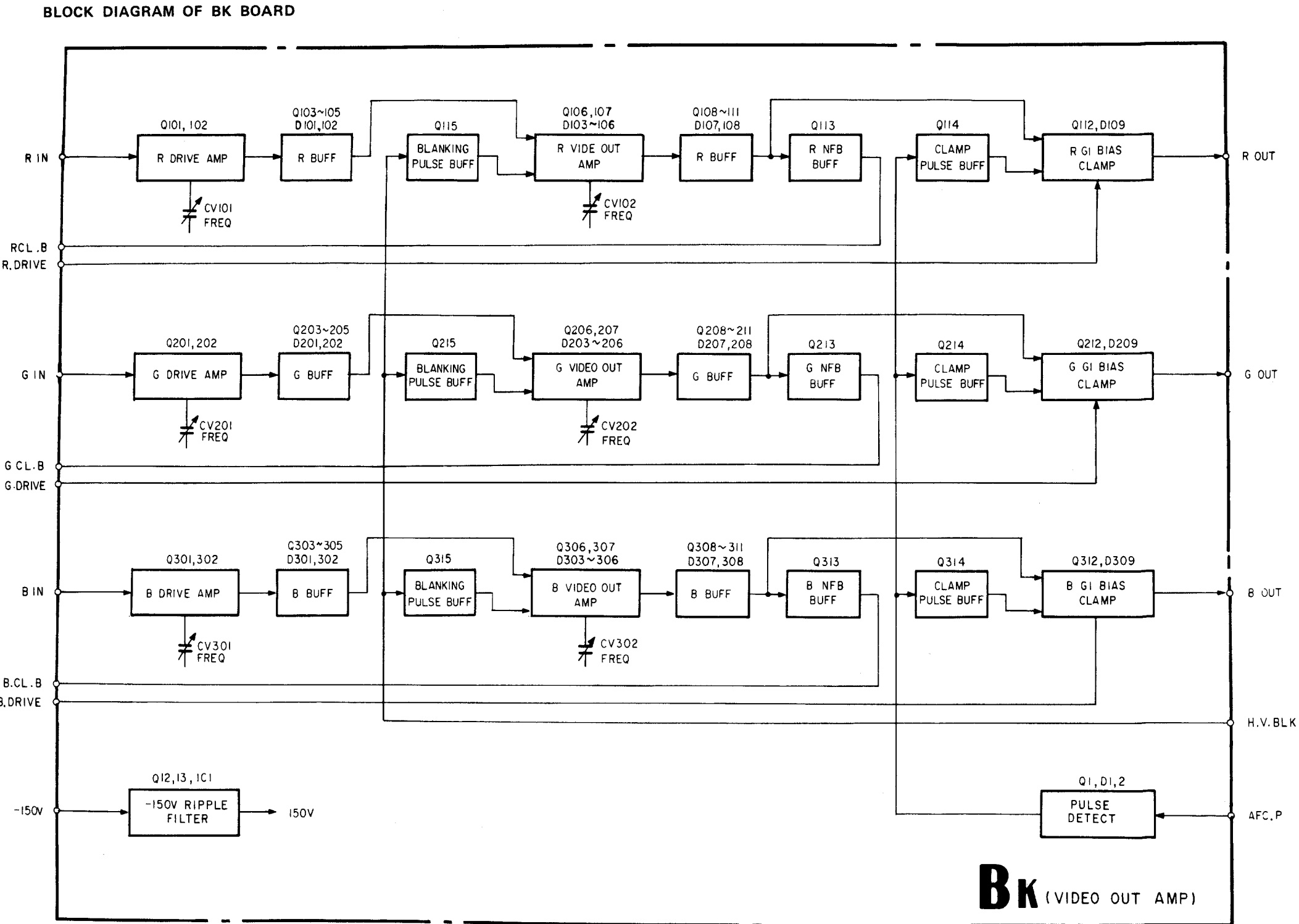
Following are described about Red channel. Green and Blue channel are the some.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive G1 of CRT.
Gain is approx. 14
Also in this amplifier, BLANKING pulse is mixed with video signal.



3-7. BEAM CONTROL CIRCUIT (BI, BK BOARDS)
(Same as Green and Blue)

Block diagram is shown in Figure 10.

3-7-1. Detection of Cathode Current and I-V Conversion
(BI BOARD)

Cathode current is detected as a voltage by using IC105 (1/2)

3-7-2. Red G1 Bias Control (BI BOARD)

BMP is inserted in the signal during vertical blanking in BI board.
This BMP is detected as a cathode current and sampled by BM CLP
applied to FET Q113.

This bias control circuit controls the base voltage of transistor
Q114 so that converted voltage from cathode current and the
reference voltage may match.

3-7-3. Red G1 Bias Clamp Circuit (BK BOARD)

Video output signal is clamped at the voltage of collector of trans-
istor Q114 in BI board by using transistor Q112.

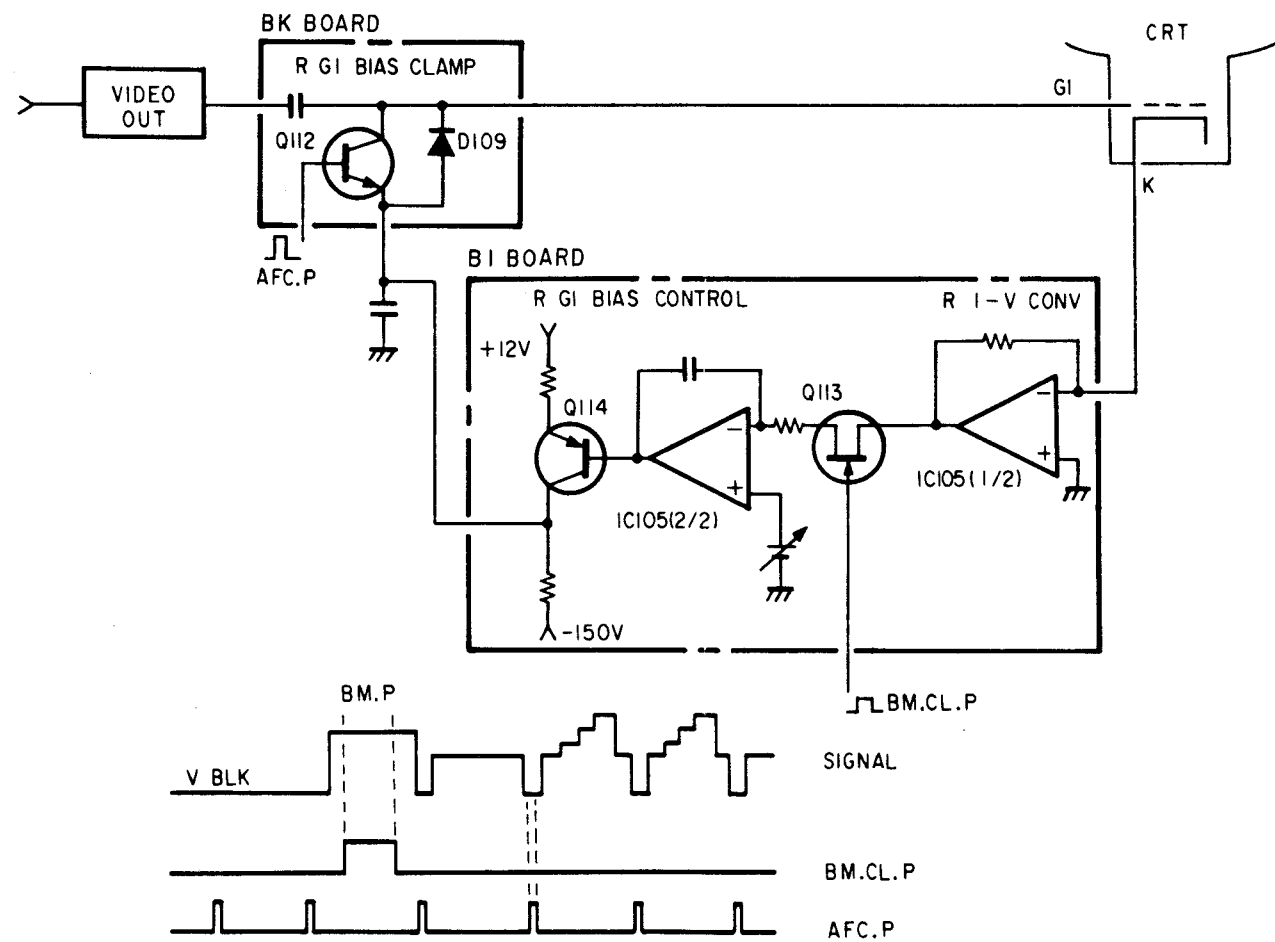


Figure 10

(BVM-1311 ONLY)

3-8. NTSC COMB FILTER (BT BOARD)

3-8-1. 3 Line Dynamic Comb Filter (Fig. A)

The fed video signal is band limited by a low-pass filter. (This signal is hereinafter referred to as the OH signal.) The OH signal becomes the signal which is 1H (63.556 μ sec) delayed by the 1H delay circuit (1H delayed signal) and the signal which is 1H further delayed by the 1H delay circuit (2H delayed signal).

The OH, 1H, and 2H signals are band limited by the respective band-pass filters (center frequency: fs) for delay of $\lambda/2$ (140 nsec). The 1H signal is further $\lambda/2$ delayed. The OH+ $\lambda/2$, 1H, 1H+ $\lambda/2$, 1H+ λ and 2H+ $\lambda/2$ (A, B, C, D and E of the block diagram) at each point are separated into chroma signals only by the correlation circuit (IC501).

The luminance signal is separated with the chroma signal subtracted from the 1H signal.

3-8-2. 2 Line Simple Comb Filter

The chroma signal is separated with the OH+ $\lambda/2$ and 1H+ $\lambda/2$ signal subtracted, and the luminance signal is separated by subtracting the chroma signal from the OH signal.

3-8-3. 1H Delay Circuit (Fig. B)

The 1H delay circuit consists of two CCD delay lines.

These CCD delay lines are used in parallel to attain 1H (63.556 μ sec) signal delay.

3-8-4. Band-pass Filter (Fig. C)

The band-pass filter consists of a delay line. It performs band limiting with the group delay kept constant.

3-8-5. Correlation Circuit (IC501) (Fig. D)

The correlation circuit consists of a limiter circuit which is common to emitters to perform separation of a chroma signal.

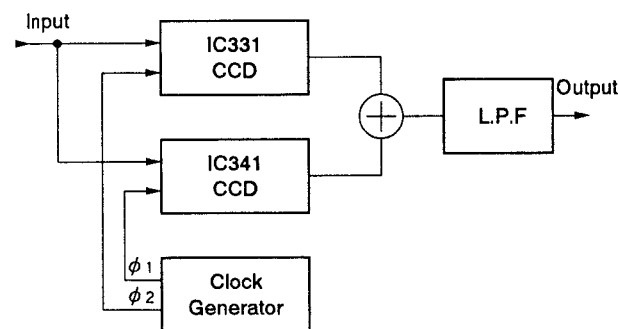


Figure B

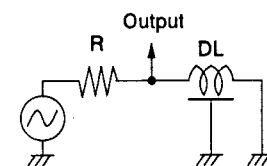


Figure C

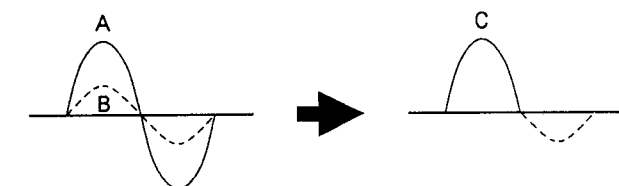
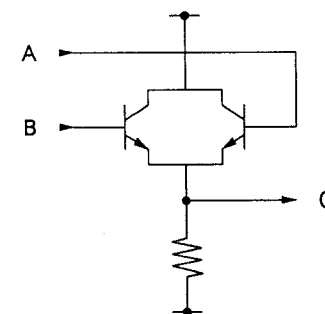


Figure D

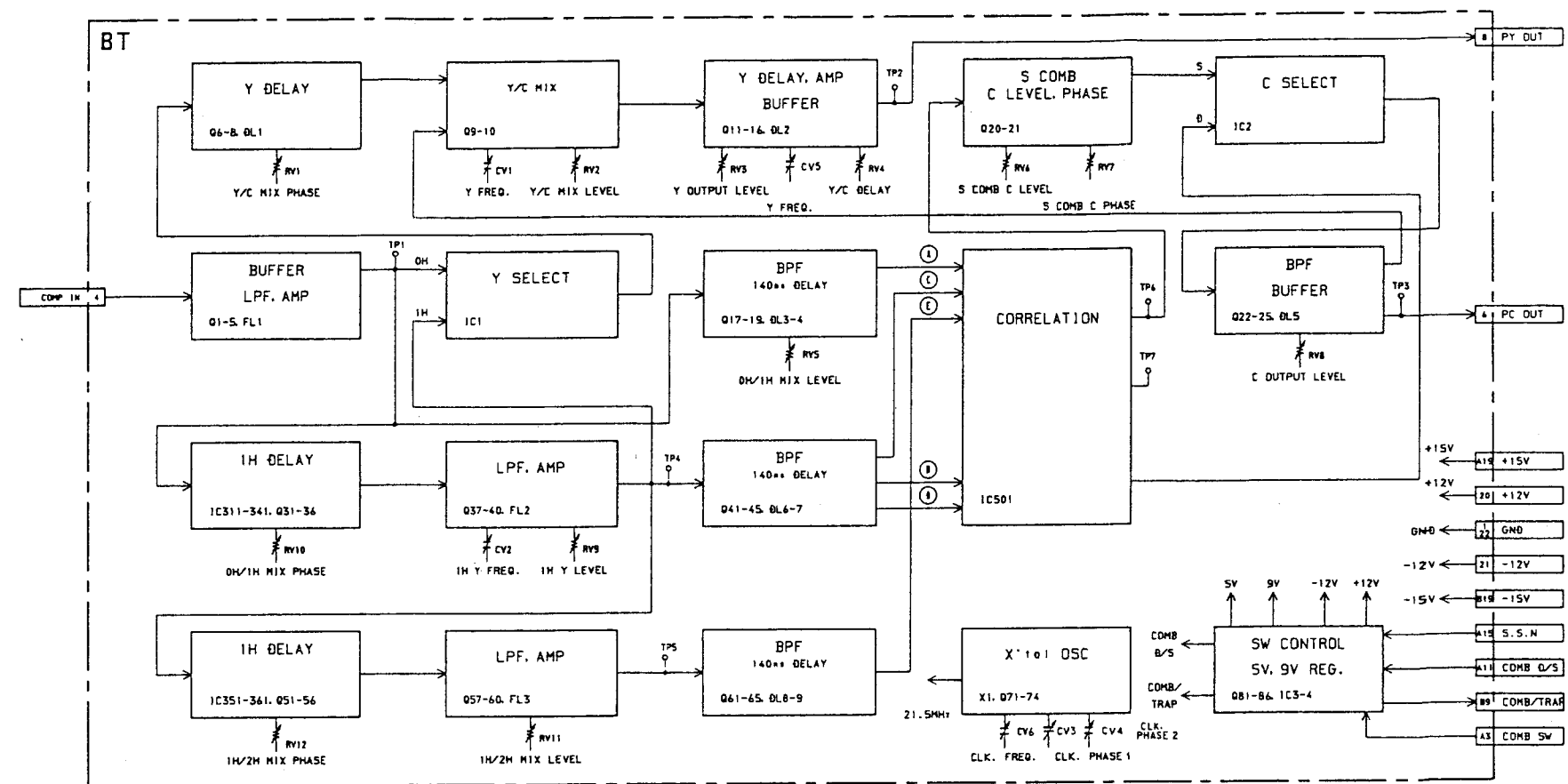


Figure A

3-9. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

3-9-1. Chroma Band Pass Filter

This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor Q103 and Q104 activates and base voltage of Q5 goes down to -12V and Q15 is cut off and then chrominance signal (Pure C) is provided from comb filter circuit to IC2.

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2.

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

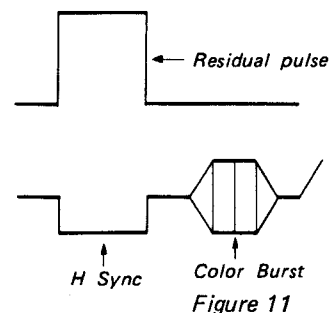


Figure 11

The level of chrominance signal from residual switch circuit (IC2 pin ④) is divided by resistor R85 and R86 and is fed to chroma amplifier circuit (Q6, Q7, Q8). The gain of this amplifier is almost 1 and this amplifier has 2 outputs. They are non-inverted signal and inverted signal. Non-inverted signal is fed to R-Y input terminal (IC1 pin ③) of demodulator and inverted signal to B-Y input terminal (IC1 pin ②).

The chrominance signal from residual switch is also fed to phase control circuit (Q9, Q10, Q11, Q12, D12). In this circuit, a variable capacitance diode (D2) is used to control the phase of color burst signal. Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.

Analog switcher IC3 (2/3) activates to make short-circuit between input terminal pin (13) and output terminal pin (14), only when COLOR STANDARD SELECTOR in the right side of drawer is selected to NTSC and otherwise pin (13) kept open circuit. As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC (1/3). The gated burst signal is fed to the burst input terminal pin (11) of demodulator IC1.

This IC is designed for use of NTSC demodulator. When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ⑭ and pin ⑮.

The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°. Local oscillator (3.58MHz) is formed by CW oscillator in IC1 connected to the terminal pin (5), (6), (7), (8) and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 3.579545MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩. local oscillator is controlled by APC circuit. The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.

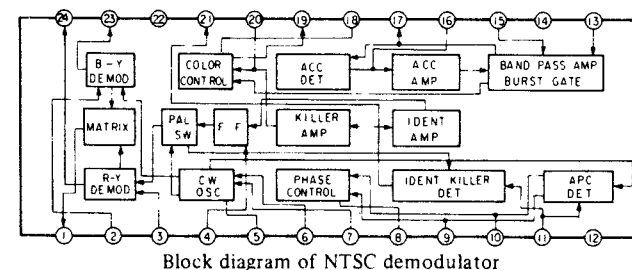


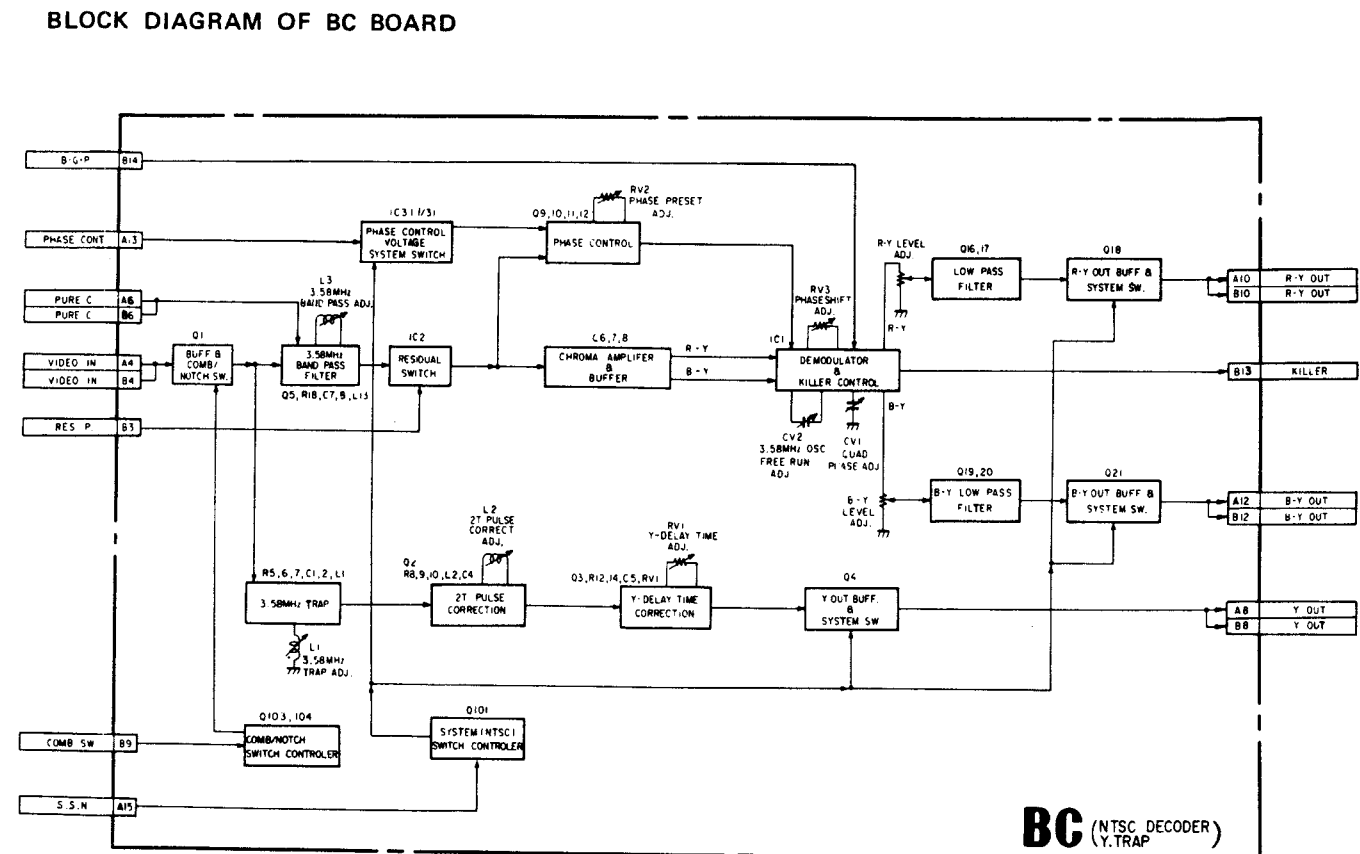
Figure 12

The composite video signal from emitter of transistor Q1 is fed to 3.58MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1. Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency. Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.



(BVM-1411P ONLY)

3-10. PAL DEMODULATOR, Y TRAP CIRCUIT (BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-10-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derived from Q5.

3-10-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2.

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

3-10-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin④) is fed to chroma amplifier circuit (Q19, Q36).

After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin (3)) and B-Y input terminal (IC1, pin (2)) of the following demodulator circuit via the buffer (Q38).

3-10-4. Phasa Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12).

In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal.

Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.

When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit.

As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-10-5. PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure11. This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ⑬ and pin ⑭.

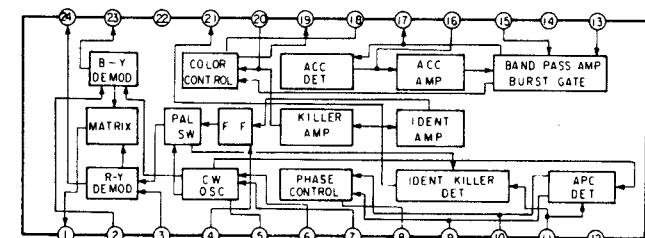
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.

Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin⑤, ⑥, ⑦, ⑧ and external circuit.

The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 4.433619 MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit.

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



Block diagram of PAL demodulator

Figure 13

3-10-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained.

R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).

The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑬ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF).

The signals input to Q20 are formed by IC7 and Q18.

Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9.

IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit.

The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2.

The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑮ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

3-10-7. 4.43 MHz Trap Circuit, Phasa Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1.

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

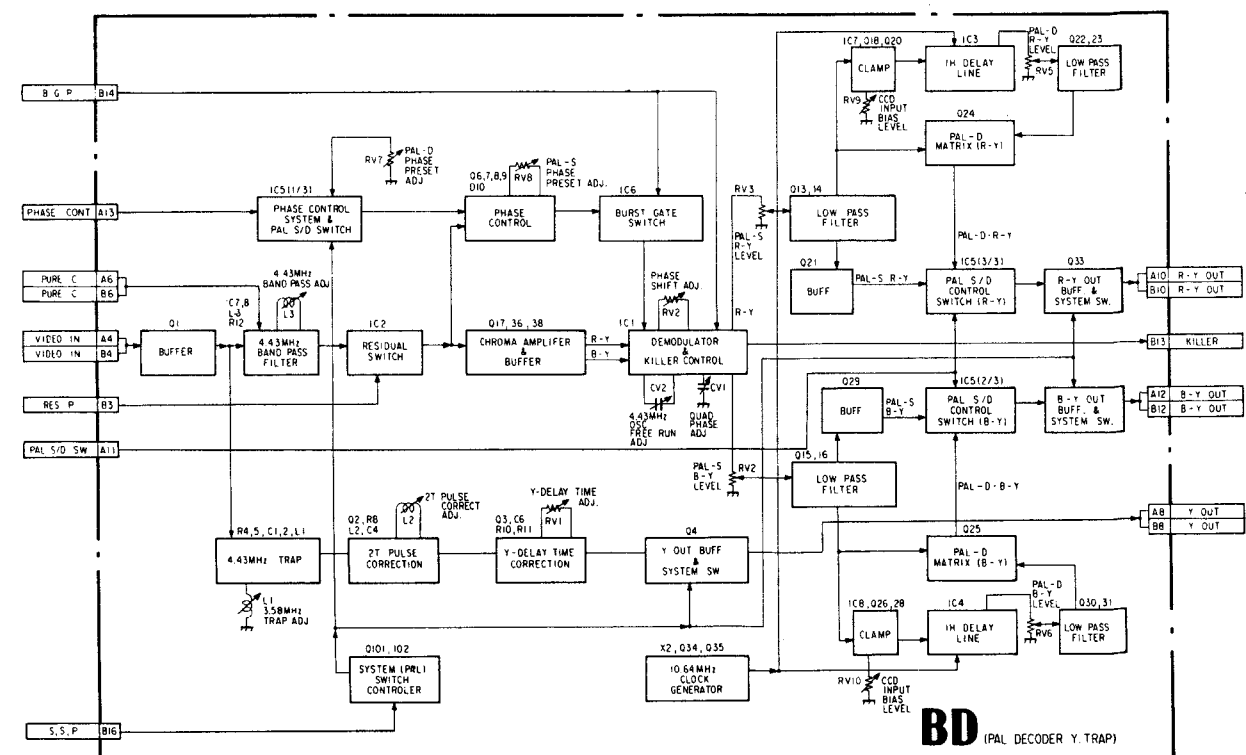
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-10-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BD (PAL) BOARD



3-11. VERTICAL DEFLECTION OUTPUT CIRCUIT
CONVERGENCE OUTPUT CIRCUIT
(EB BOARD)

3-11-1. Vertical Deflection Output

Vertical Deflection Output amplifier is composed of DC coupled SEPP amplifier (Single Ended Push Pull) and boost up circuit. This boost up circuit contains transistors Q7 and Q8 to reduce power consumption by applying the voltage to the output transistor during vertical retrace time. Both vertical rate sawtooth waveform and correction waveform for top and bottom pincushion are generated in DA board and fed to output amplifier. Vertical centering is performed by changing DC level of vertical rate sawtooth because Vertical DY (Deflection Yoke) is connected to output amplifier directly.

3-11-2. Convergence Yoke Output Circuit

CY (Convergence Yoke) is used for adjustment of misconvergence of vertical direction. This CY is driven by SEPP (single ended push pull) amplifier and connected directly. Correction waveform is provided from DB board.

3-11-3. DCT (Dynamic Convergence Transformer)
Output Circuit

This circuit is used for adjustment of misconvergence for Horizontal direction. DCT is also driven by SEPP amplifier and AC coupled to it. Correction waveform is provided to the primary of DCT and transferred to the secondary windings, output voltage of secondary windings is applied to CV electrode of CRT (picture tube) and performed convergence adjustment. circuit diagram shown in Figure 14 is the theory of basic DCT circuit.

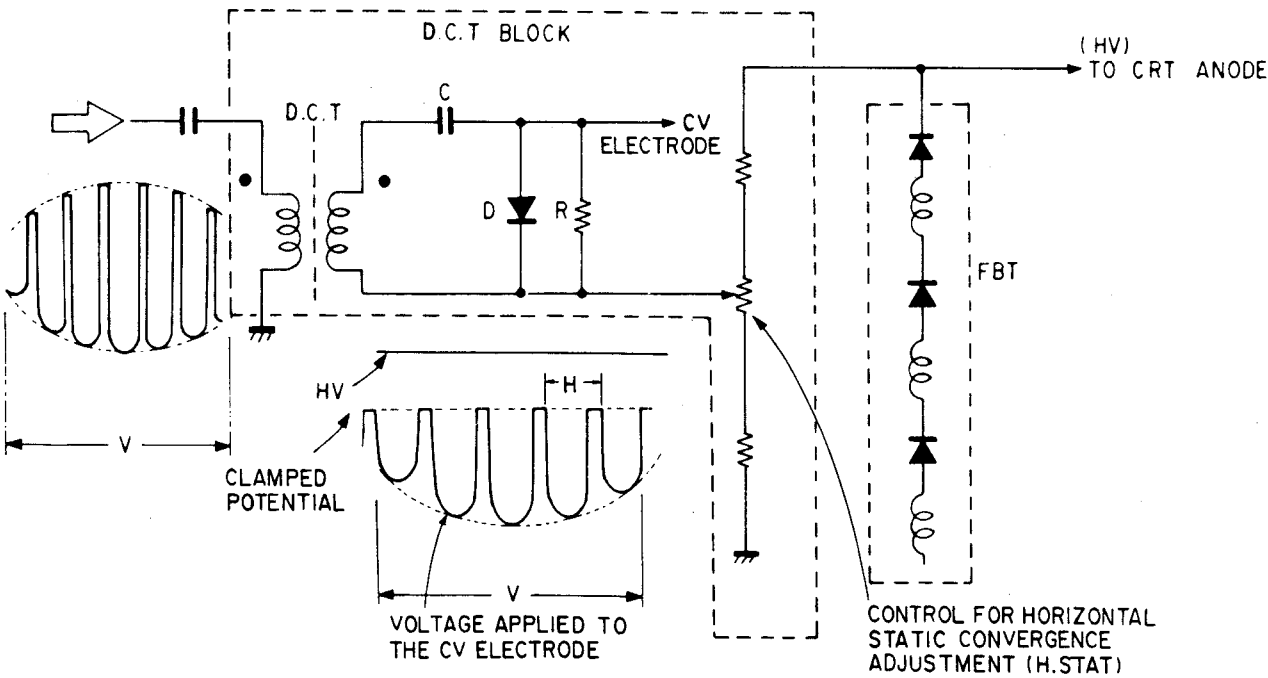
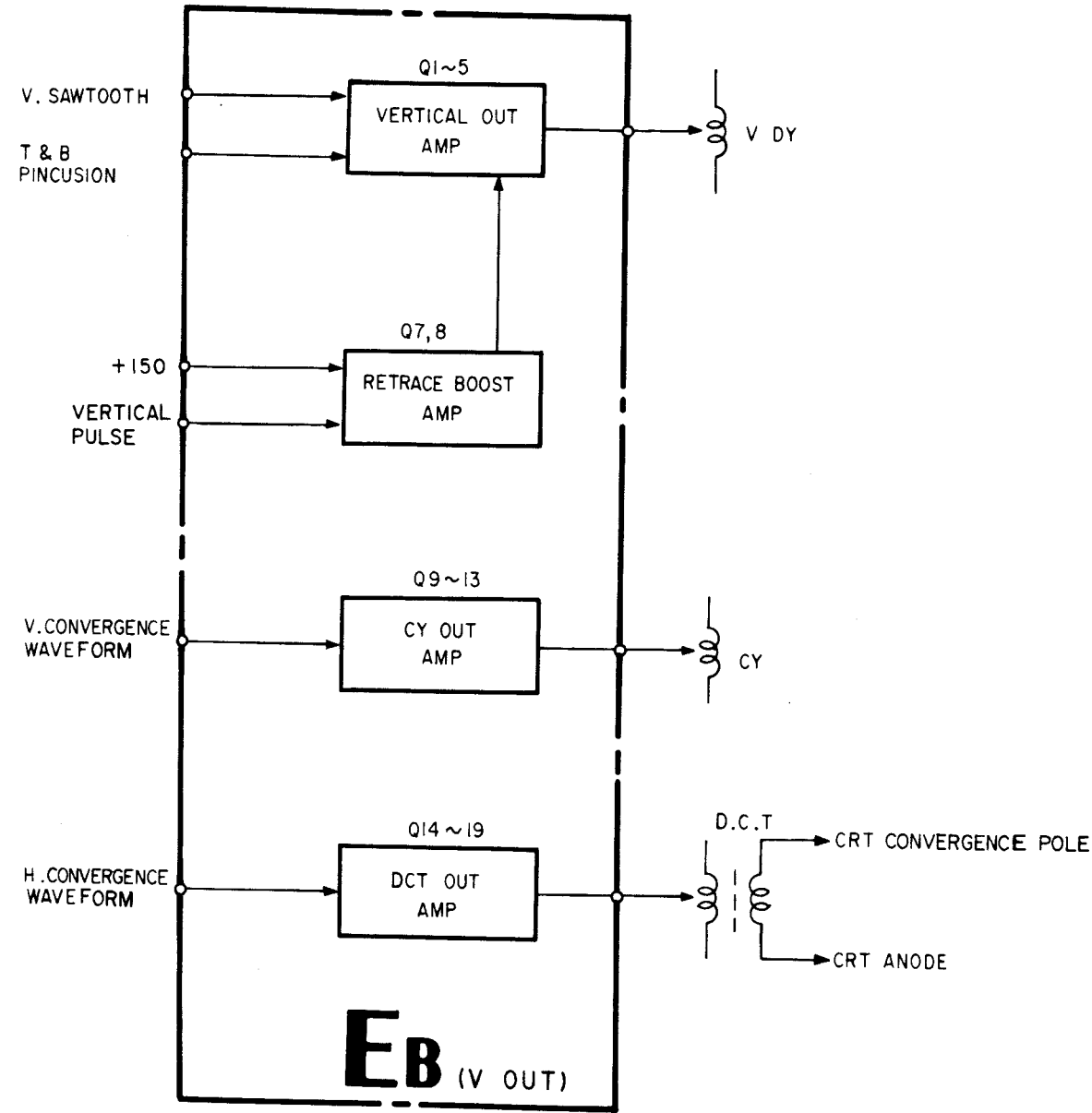


Figure 14

BLOCK DIAGRAM OF EB BOARD



3-12. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

3-12-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V). In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier. See Figure 15(a). In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier. See Figure 15(b).

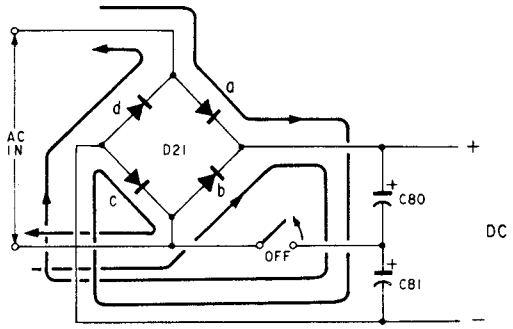
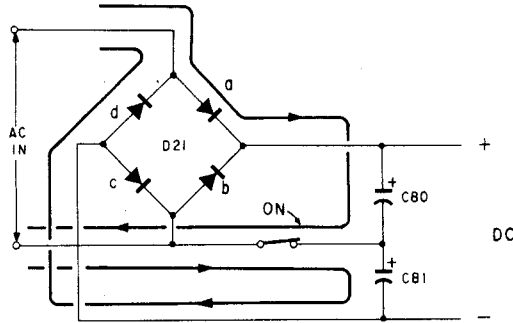


Figure 15(a)



AC IN Passes through D21d and charges to C81.

Passes through D21a and charges to C80.

Figure 15(b)

3-12-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector. This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically. When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically. Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel. When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

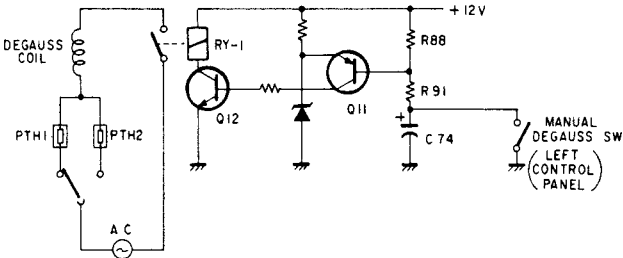


Figure 16

3-12-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

3-12-4. Switching Regulator Circuit

Block diagram is shown in Figure 20. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage E_{IN} rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer). Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, ±15V, ±18V and +5V. The other is for high voltage ±150V power supply. Low voltages are generated by IC2, T1, T2, T3 and Q1. High voltages are generated by IC3, T6, T7 and Q2. Refer to block diagram. Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

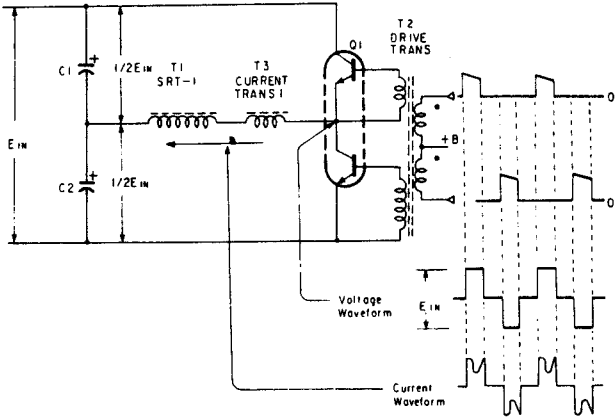
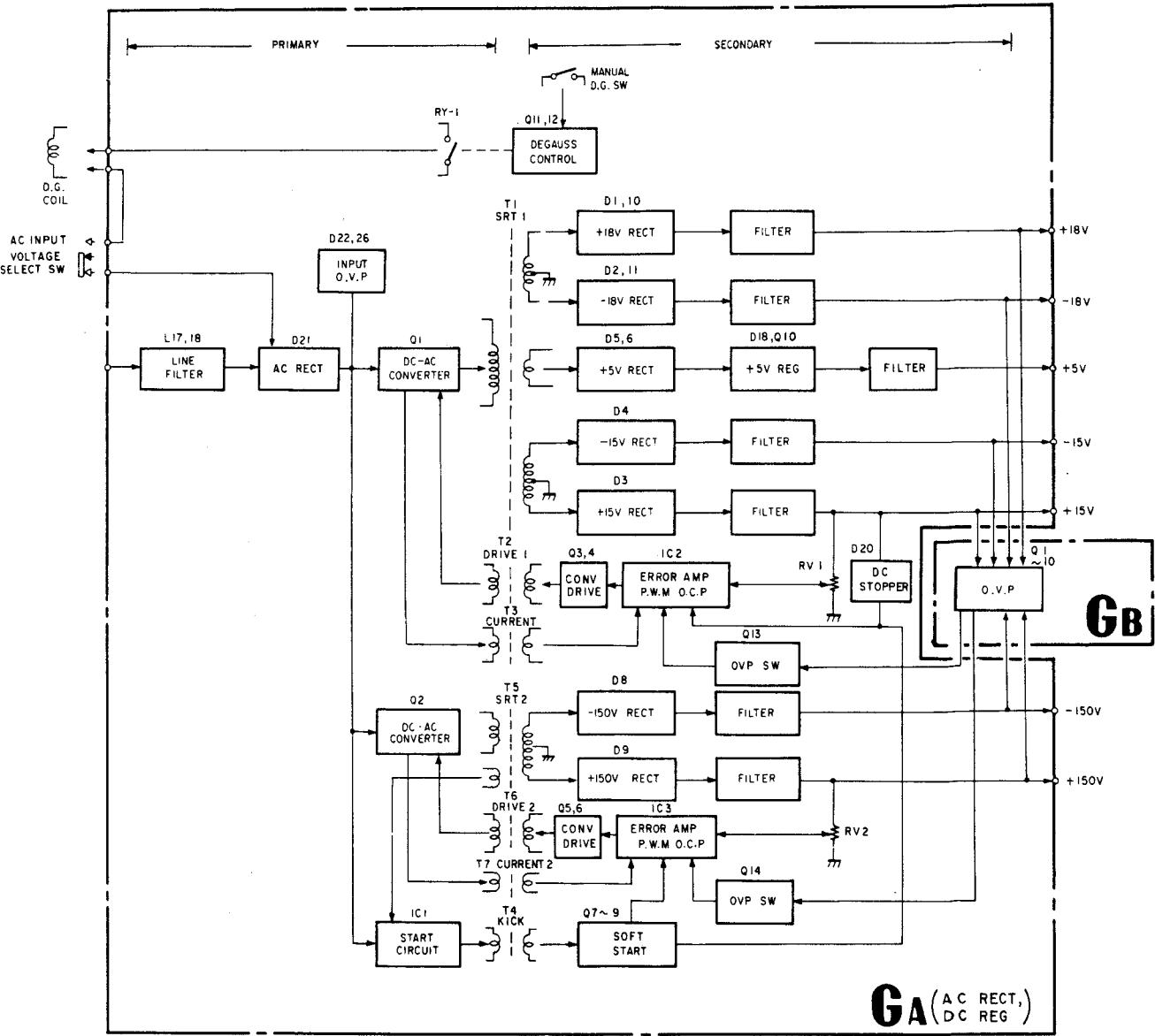


Figure 17

3-12-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA. GB board works for over voltage protection. When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

BLOCK DIAGRAM OF GA, GB BOARD



3-13. CONVERGENCE CIRCUIT (DB, EB BOARDS, DCT BLOCK)

3-13-1. General Description

This is a simple explanation of the convergence system in Super fine Trinitron picture tube used in this model. The Deflection Yoke (DY) used in this model generates an almost uniform magnetic field in order to get fine beam spot size. Accordingly basically misconvergence of horizontal direction as shown in Figure 18 is generated on the picture screen.

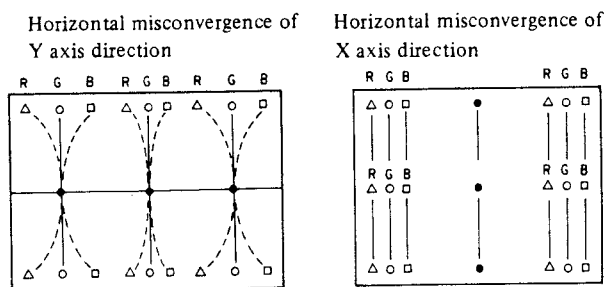


Figure 18

3-13-2. Static Electrical Convergence System

Trinitron system has a unique static convergence system. The structure of electric gun is shown in Figure 19. G6 is the electrode for convergence. Static electrical convergence control can be used. In this system beam spot deterioration is less than that of the electromagnetic system.

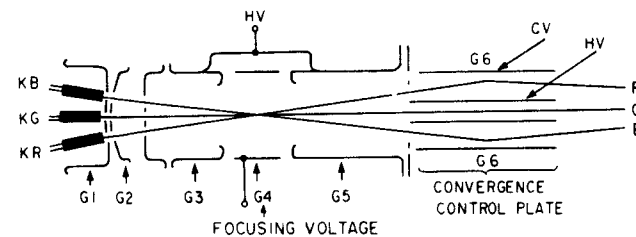
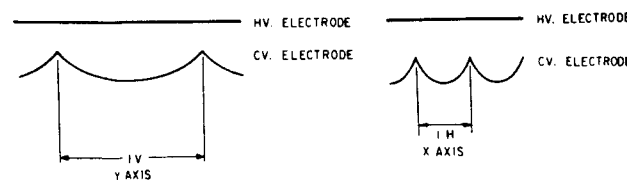


Figure 19

3-13-3. Convergence Correction Circuit (Horizontal Convergence)

Misconvergence of horizontal direction on Y axis is corrected by applying vertical rate parabola waveform to the convergence plate (G6). And misconvergence of horizontal direction is corrected by applying horizontal rate parabola waveform to G6. See Figure 20.



HORIZONTAL MISCONVERGENCE

Figure 20

In this model, transformer is used to supply correction voltage to the G6 electrode for the horizontal direction misconvergence. In the secondary of the transformer peak clamp circuit using diode is applied so that both the vertical rate parabola waveform and horizontal rate parabola waveform are mixed and supplied to CV electrode. See Figure 21.

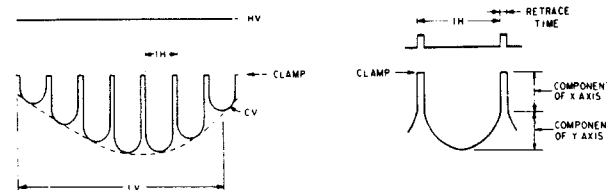


Figure 21

The correction waveforms are generated in DB board and output amplifier is located in EB board.

3-13-4. Vertical Convergence

Theoretically there is no misconvergence of Vertical direction since electric gun is aligned in line. But there is a slight amount of misconvergence due to the variations of CRT and DY and also due to the terrestrial magnetism.

There are also 2 kinds of misconvergence of vertical direction on X axis and Y axis as same as horizontal direction.

Misconvergence of Vertical direction on X axis is corrected by CY (convergence yoke).

Figure 22 shows the CRT neck as seen from the rear side.

Red beam and Blue beam are moved to the vertical direction differentially by CY. As Green beam is at the center of the CRT neck, it is not affected by the magnetic field of CY due to the cancellation of the magnetic field at the center of the neck.

Misconvergence of vertical direction on Y axis is corrected by NTC (Neck Twist Coil).

A Neck Twist Coil is wound around the center of electrode G2 ~ G3 (See Figure 22) for the correction. Theoretically, as the RED and Blue beams have H1 component (They are opposite direction) as seen in Figure 22, they move to the vertical direction due to the magnetic field generated by NTC.

However as magnetic field of the NTC is the parallel to the Green beam, Green beam is not affected.

Correction waveform generator is located in DB board, output amplifier of CY is in EB board and output amplifier of NTC is in DB board.

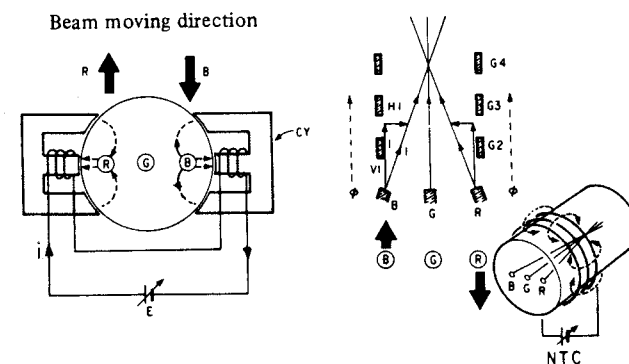
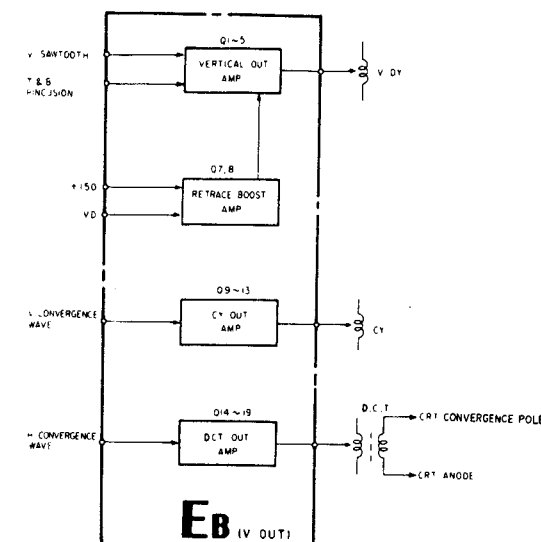
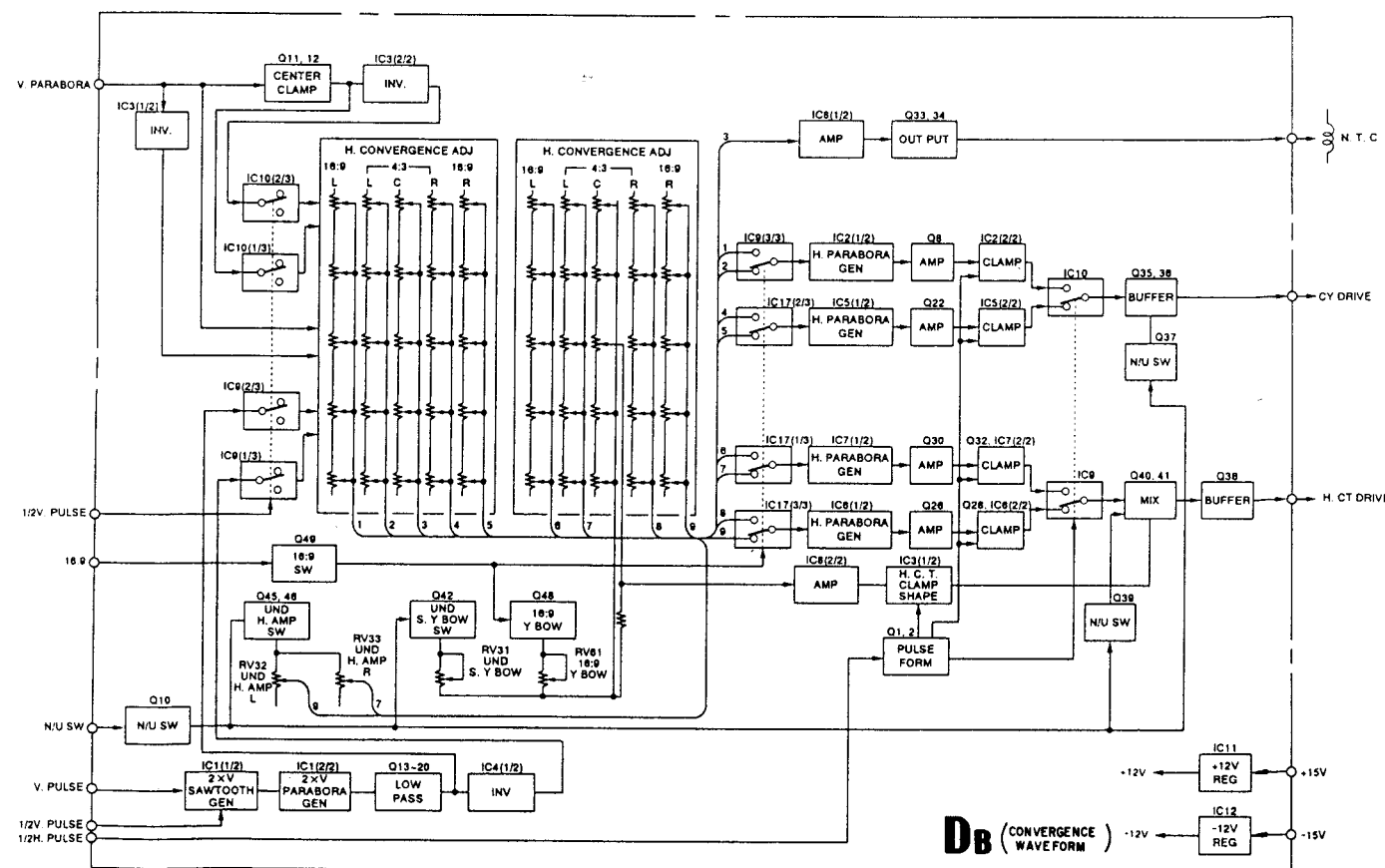


Figure 22

BLOCK DIAGRAM OF EB BOARD



BLOCK DIAGRAM OF DB BOARD



3-13-5. Convergence Correction Waveform Generator (DB BOARD)

This monitor incorporates unique convergence circuit which can adjust convergence at 15 positions of the picture screen, each 15 potentiometers for horizontal and vertical convergence adjustments are located on the left side of the drawer corresponding to the picture screen.

3-13-6. Horizontal Convergence Correction Waveform Generator

A vertical rate parabola waveform is supplied to the DB board from the DB board and is inverted and switched to make correction waveform.

For the left side of the picture screen, the correction waveform is compounded by adjusting potentiometers RV16 ~ RV20. This waveform is converted to horizontal rate parabola waveform which level is proportional to the compounded waveform by H parabola generator (IC6, Q25). This is amplified by transistor Q26 and clamped at the center position of the horizontal period by transistor Q28 and IC6. See Figure 23.

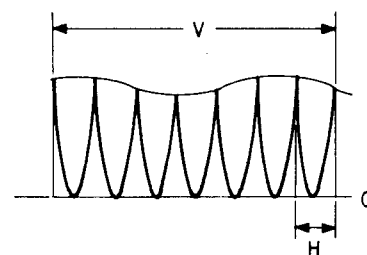


Figure 23

For the right side of the picture screen, the correction waveform is generated by adjusting potentiometers RV26 ~ RV30 as same as the left side of the picture.

These correction waveforms (left and right side) are switched and mixed by analog switcher which activates at 1/2H period as seen in Figure 24.

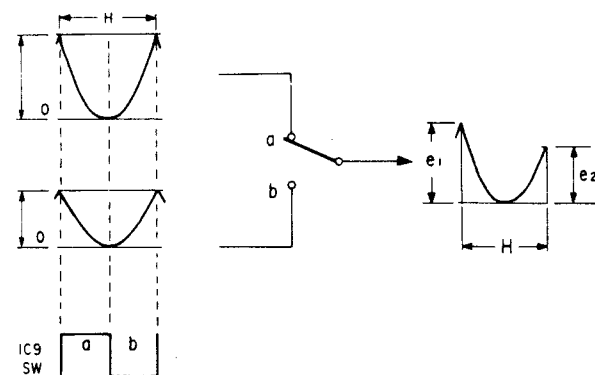


Figure 24

As a result, right side adjustments and left side adjustment can be performed independently of each other.

For the center of the picture screen, vertical parabola waveform is compounded to the correction waveform by adjusting potentiometers RV21 ~ 25, and converted to horizontal pulse. This means amplitude of horizontal pulse is modulated by vertical parabola.

This modulated pulse is mixed with horizontal parabola for left and right side correction. This mixed waveform is amplified and supplied to convergence plate in CRT via DCT. Thus horizontal convergence is corrected. See Figure 25.

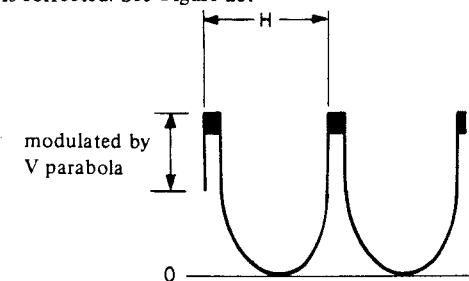


Figure 25

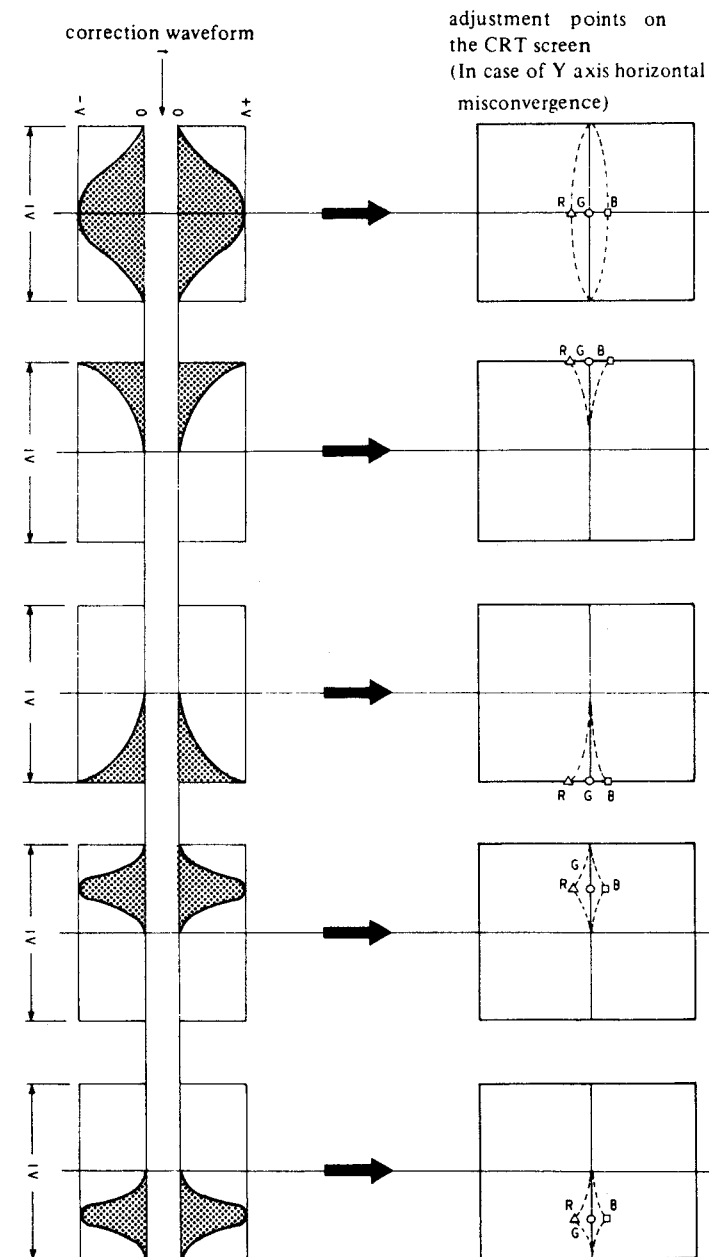


Figure 26

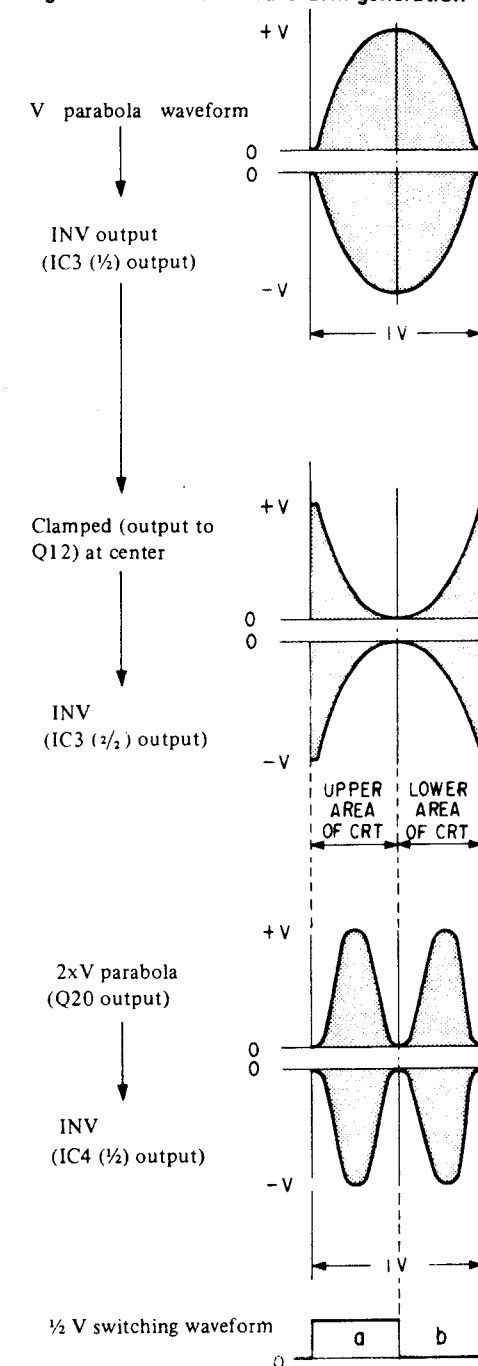
3-13-7. Vertical Convergence Correction Waveform Generator

For the left and right side of the picture, correction circuit for vertical convergence is same as horizontal correction circuit of left and right side of the picture. The correction waveform is amplified in EB board and supplied to CY.

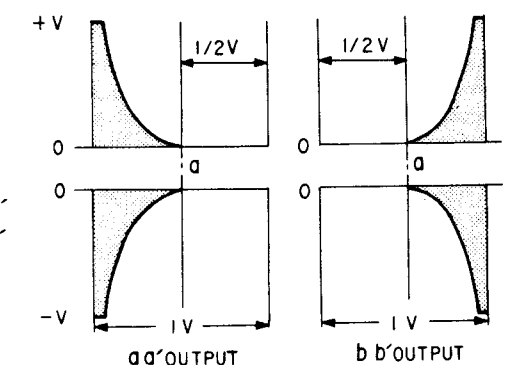
For the center of picture screen, correction waveform is fed to amplifier (IC8 (1/2), Q33 Q34) and supplied to NTC (Neck twist Coil).

This vertical convergence is performed.

Diagram of correction waveform generation



Correction waveform for top and bottom of the CRT screen (Vertical rate)



Correction waveform for center position of CRT screen (Vertical rate)

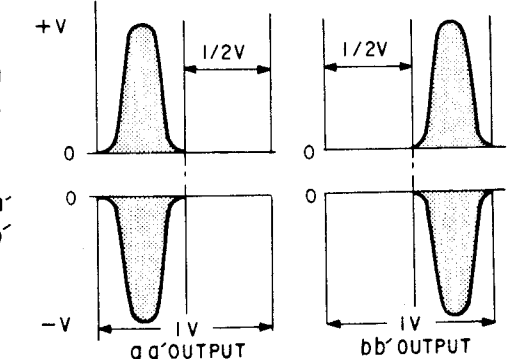
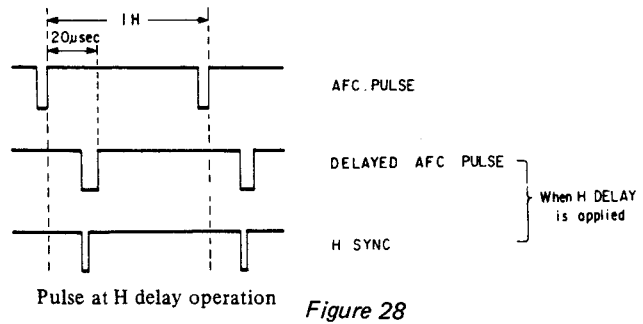


Figure 27

3-14. DEFLECTION CIRCUIT (DA BOARD)

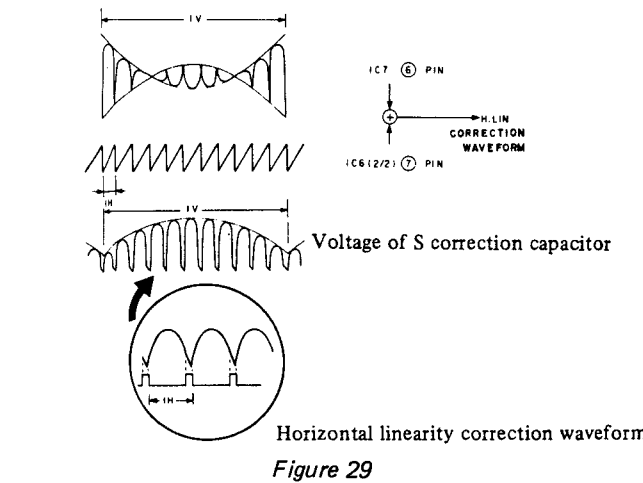
3-14-1. H Delay and Horizontal AFC (Automatic Frequency Control) Circuit

In this model H delay function is performed by delaying H. AFC pulse in the horizontal AFC circuit. (See Figure 28) H. AFC pulse which is fed from H.O.T. (Horizontal Output transformer) is wave shaped and is delayed about 20 μs by IC1 (2/2). This delayed pulse is integrated by inductor L1, and capacitor C14, thus sawtooth waveform is obtained and fed to terminal pin ④ of IC4. AFC detection is performed by IC4. Output of AFC detector is fed to control terminal of horizontal oscillator (H.OSC) via low pass filter composed of capacitor C12, C15 and resistor R10. 3 types of AFC mode are selected by changing low pass filter which determines AFC time constant. AFC time constant circuit is composed of switch S1, resistor R13, R14, R15 and capacitor C17, C18.



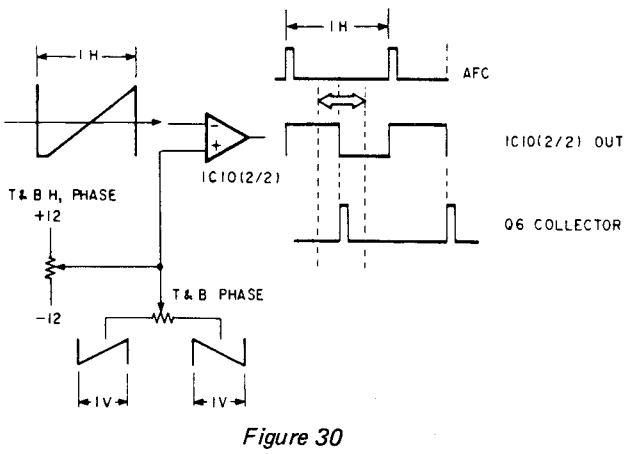
3-14-2. Horizontal Linearity Correction Circuit

In this model Horizontal Linearity correction is made by applying correction voltage to the Horizontal deflection circuit. Basically, Linearity correction is made by modulating power source of horizontal output circuit with horizontal sawtooth voltage. Also So-called "Inside pincushion" correction is performed by applying correction waveform to S correction capacitor. This correction waveform is generated by balanced modulator (IC7) with vertical rate parabola waveform. See Figure 29. Horizontal sawtooth waveform is generated by IC5 (1/2) for horizontal linearity correction. Horizontal rate parabola waveform is generated by integration of saw tooth by IC6 (1/2). This parabola waveform is performed balanced modulation by IC7 with vertical rate parabola waveform, horizontal sawtooth and parabola waveform are fed to horizontal linearity output amplifier in EA board. Correction of horizontal linearity correction and inside pincushion correction are performed.



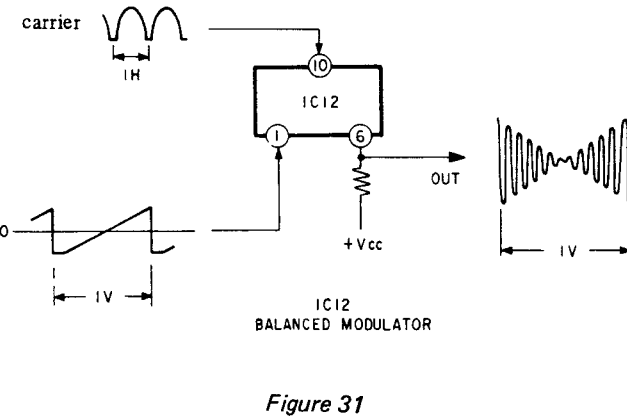
3-14-3. Horizontal Blanking Pulse Generator

Horizontal rate sawtooth waveform generated in H. Linearity circuit is fed to the comparator IC8 (1/2). In this circuit, 1/2H delayed pulse is obtained. This pulse is fed to integrator IC9 (1/2) and 1/2H delayed sawtooth waveform is obtained and this is fed to the comparator IC10 (1/2). Thus the comparator generates horizontal pulse to make H. Blanking pulse which starts just before the starting edge of the retrace time. Also width of horizontal blanking pulse is determined by JK-FF IC1 (1/2).



3-14-4. Top & Bottom Pincushion Circuit

Horizontal rate sawtooth waveform generated in H Linearity circuit is also fed to IC10. IC10 generates advanced H pulse for the phase correction because vertical Deflection Yoke works as an integrator at horizontal rate, and deflection current for Top & Bottom pincushion correction is delayed about 1/2H for this reason. See Figure 30. Advanced H pulse is fed to IC11 (1/2) and advanced horizontal sawtooth waveform is generated. It is integrated by IC11 (2/2) and horizontal rate parabola waveform is obtained. Modulated butterfly waveform for Top & Bottom pincushion correction is obtained by Balanced modulator IC12. In this balanced modulator, horizontal rate parabola waveform is used as a carrier and vertical rate sawtooth waveform is modulated by this carrier. See Figure 31. This correction waveform is fed to vertical deflection output amplifier in EB board.



3-14-5. Automatic 50/60Hz Field Selection Circuit

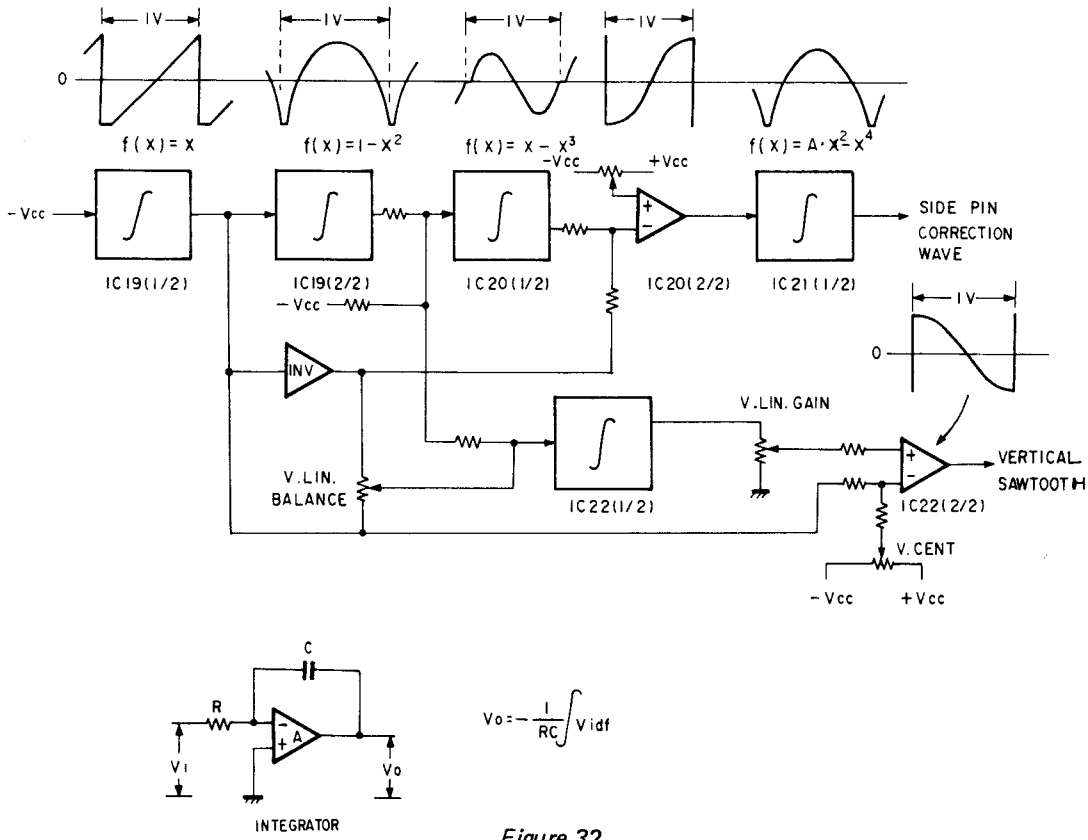
This model has an automatic vertical field frequency selection circuit so that color systems with different frequencies such as NTSC or PAL and SECAM can be received. IC18 is automatic field frequency detecting device and its output switches time constant of integrator in vertical deflection circuit.

3-14-6. Scan Mode Selection Circuit

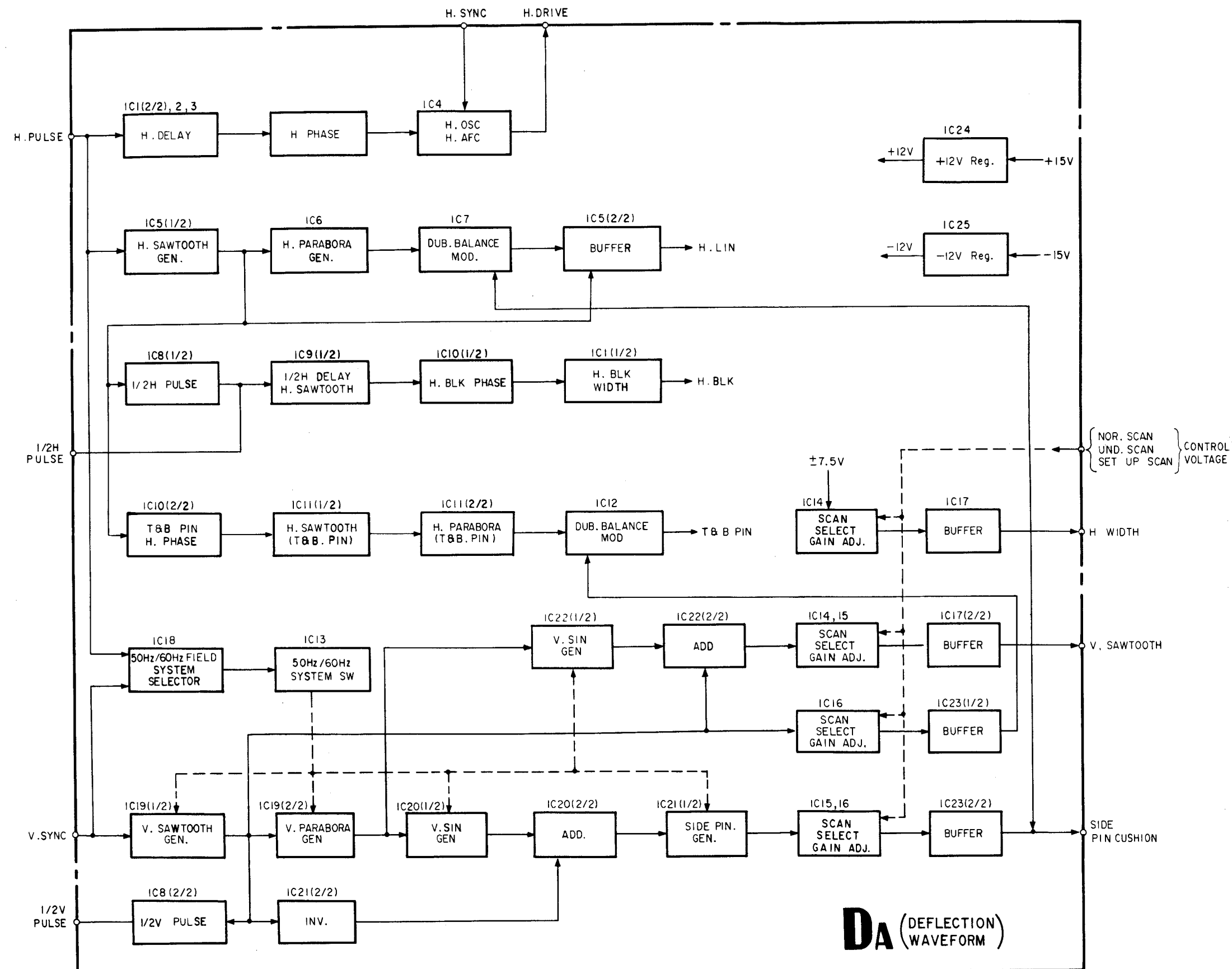
There are 3 modes of scanning in this model: NORMAL SCAN/ UNDER SCAN/SET UP SCAN. There are level adjustments for H1 width, V, height side pincushion and top & bottom pincushion. Levels of correction waveforms are switched so that these adjustments are made independently for each scanning mode. IC14, IC15 and IC16 activates for this purpose.

3-14-7. Vertical Deflection, Side Pincushion Correction

IC19 (1/2) generates vertical rate sawtooth waveform for vertical deflection. V sawtooth waveform is generated by the integrator IC9 (1/2) which is reset by V sync. Also vertical rate parabola is generated by integrating V. sawtooth waveform by IC9 (2/2). This V parabola is used for side pincushion correction, and also V. parabola is converted to sine waveform by IC20 (1/2) and is mixed with V parabola waveform. This mixed waveform is used for side pincushion correction and fed to side pincushion output amplifier in EA board. Vertical drive voltage for vertical deflection is generated by mixing vertical rate sawtooth waveform generated by IC19 (1/2) and sine waveform generated by IC22 (1/2). This drive waveform is fed to vertical deflection output amplifier. Balance adjustment of vertical linearity correction can be performed by IC22 (1/2) and vertical centering can be adjusted by IC22 (2/2).



BLOCK DIAGRAM OF DA BOARD



3-16. HIGH VOLTAGE REGULATOR (PA BOARD)

This high voltage regulator uses also DC-DC converter so as to reduce power consumption.
The theory of operation of this circuit is as follows.

3-16-1. Detection of High Voltage

High Voltage applied to the CRT anode is converted to the low voltage by DCT block (Horizontal Convergence Transformer). This low voltage is fed to buffer amplifier IC-4(2/2) and compared with external reference voltage in IC-1. The DCT contains resistor-network and transformer for convergence adjustment. This resistor-network works as a voltage divider.

3-16-2. PWM Modulator

IC-1 works as error amplifier and PWM modulator comparing voltage between high voltage and the reference voltage is amplified and modulated so as to drive Q-102 output transistor. Output signal from IC-1, which is modulated in PWM, is fed to Q-102 via drive transformer. +B line supplied to FBT (Fly Back Transformer) circuit is controlled by switching Q-102 output transistor on/off.

3-16-3. Output Circuit

When high voltage drops down, output voltage of DCT also drops as above mentioned. At this time PWM circuit is designed so that the ON period of Q-102 output transistor should be longer than high voltage drops down. +B line, switched ON/OFF by Q-102, is supplied to converter circuit which drives FBT via LOT (Line Output Transformer).

Amount of collector current of Q-103, which drives FBT, depends upon ON period of Q-102 because PWM modulator is triggered by H. pulse. Therefore when ON period of Q-102 is longer, collector current of Q-103 increases and energy stored in capacitor C124 increases, causing potential of C124 to rise. (Refer to Figure 34) When output transistor Q-103 goes off, flyback pulse is generated by resonance between capacitor C108 and inductance obtained by parallel connection of FBT and LOT. This flyback pulse is transferred to the secondary circuit of FBT. Therefore high voltage is generated.

3-16-4. High Voltage regulator

Q102, Q107, IC4 (2/2), IC1 (IC for controlling P.W.M) and HVR (HCT block) form a regulator.

Since the detection pin voltage of HVR is decreased when the high voltage is lowered due to increase of the CRT current, it makes the switch ON time length of Q102 longer. As a result, the collector peak current of Q103 is increased and accordingly, the energy accumulated in C124, which is fed to it through the FBT, is increased. In this way, it raises the potential of C124 and regulates the high voltage.

Q103, C108, C124 and the FBT form a high voltage converter circuit.

The pulse of on-duty 60% is generated with the H pulse by a time constant circuit which consists of Q109, Q110, Q111, Q112, R143, C128, R144, C127 and D111. When Q103 is switched OFF due to the on-duty 60% pulse, flyback pulse is generated at the collector of Q103 by resonating of the LOT, FBT and C108.

3-16-5. High Voltage Protection Circuit

High voltage protector activates to shut down high voltage, when high voltage exceeds the predetermined value so as to prevent X-ray radiation.

The high voltage converted to the low voltage is detected at the terminal of DCT block. This detected voltage is fed to the $\oplus$ input terminal of comparator IC-2(2/2) via low pass filter, which is composed of resistor R245 and capacitor C216. When this voltage exceeds the reference voltage, the voltage of $\ominus$ input terminal of comparator IC-2(2/2), output level of this comparator goes high level and turns SCR (D206) gate on to shut down the drive pulse of flyback generator. Thus high voltage stops.
The reference voltage of the comparator IC-2(2/2) is made by mixing stabilized voltage (zener diode D215) and the voltage at terminal 9 of FBT. So the reference voltage goes down, when beam current of CRT increases. Therefore as beam current increases, shut-down voltage of high voltage decreases.

3-16-6. Protection Circuit for Excess Beam Current

Beam current which flows in secondary windings of FBT is measured at the terminal 9 of FBT. This beam current is converted to the voltage by resistor R1 (R3) and R2 (R4) located in PB board in series connection of secondary windings of FBT. This converted voltage is fed to $\ominus$ input of comparator IC-2(1/2) or IC-3(1/2). As beam current increases, $\ominus$ input voltage goes down. When beam current increases until $\ominus$ input voltage goes below the reference voltage ($\oplus$ input terminal voltage) output voltage of comparator goes up high level and SCR (D205 or D206) turns ON. Thus drive pulse of flyback generator is shut down. Therefore high voltage stops.

3-16-7. CRT Protection Circuit

When vertical deflection stops, this circuit activates to shut down high voltage to prevent damage of CRT.

When vertical deflection stops, there is no vertical output pulse generated at vertical output amplifier. So Q201 transistor is cut off and output of comparator IC-4(1/2) goes up high level. Q202 transistor turns on and flyback generator stops.

3-16-8. G2 Voltage Regulator

Flyback pulse generated at Q103 (H output transistor) is rectified to obtain DC voltage. This rectified DC voltage is regulated by Q104, IC-3(1/2) and Q106 transistor. Regulated 410V DC voltage is obtained. Q105 transistor which works in accordance with G2 control circuit in B1 board supplied proper voltage to G2 of CRT.

3-16-9. Power Supply for Heater

Power supply to heater is generated from secondary windings of LOT. Heater voltage is adjusted by resistor R107.

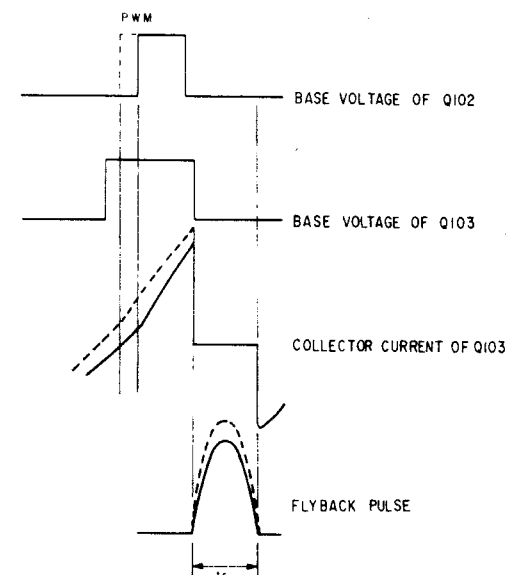


Figure 33

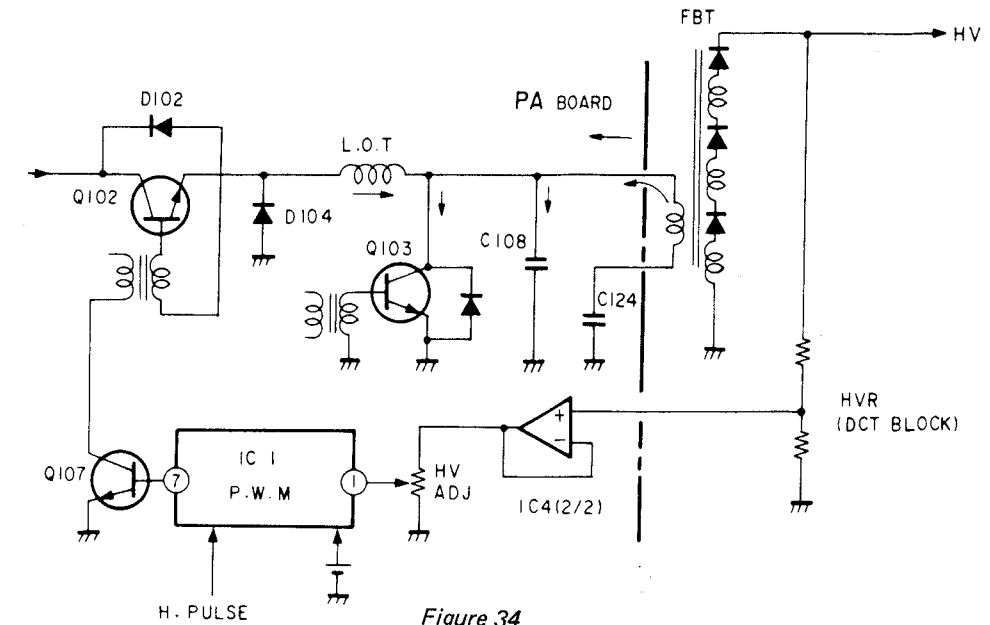
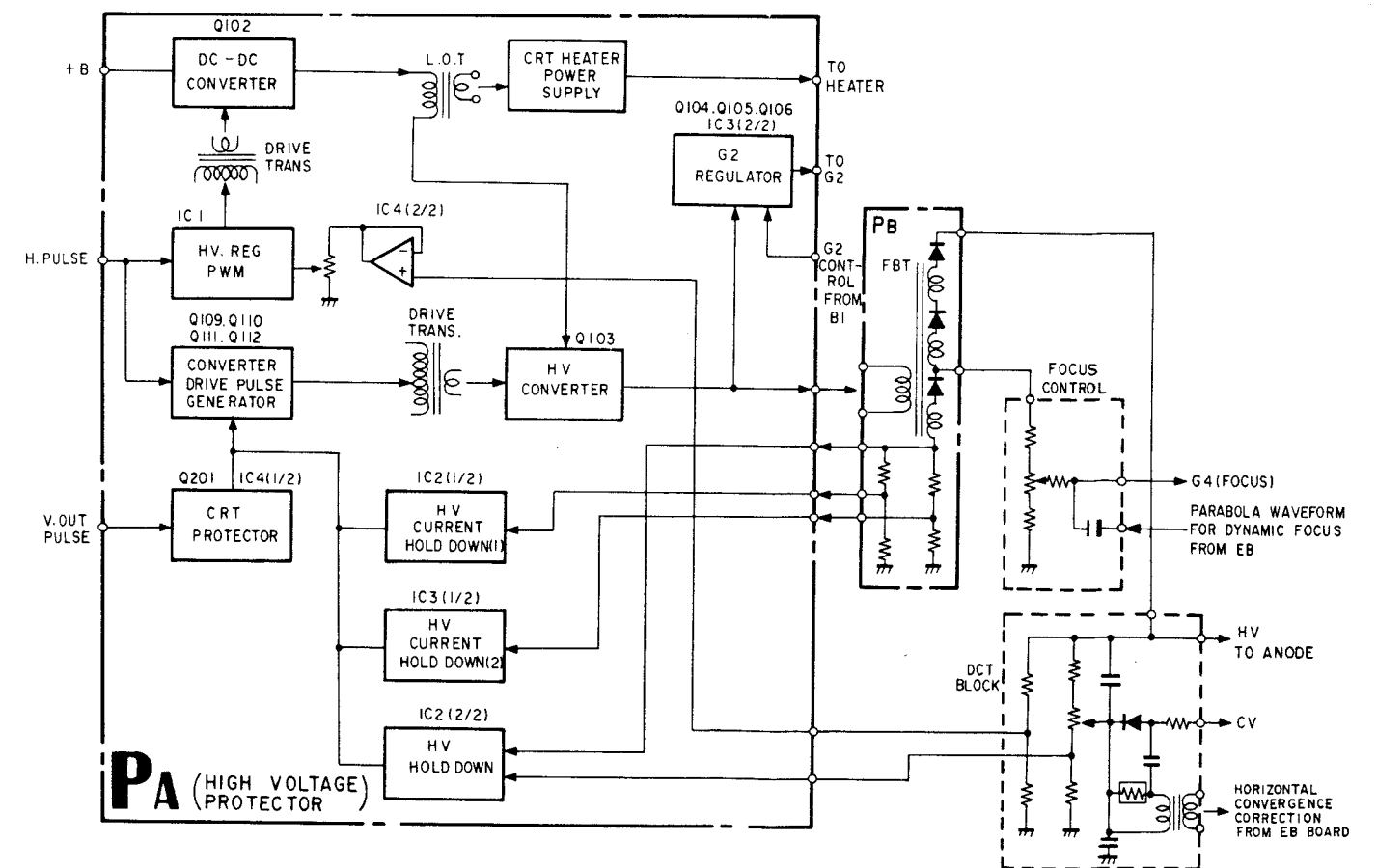


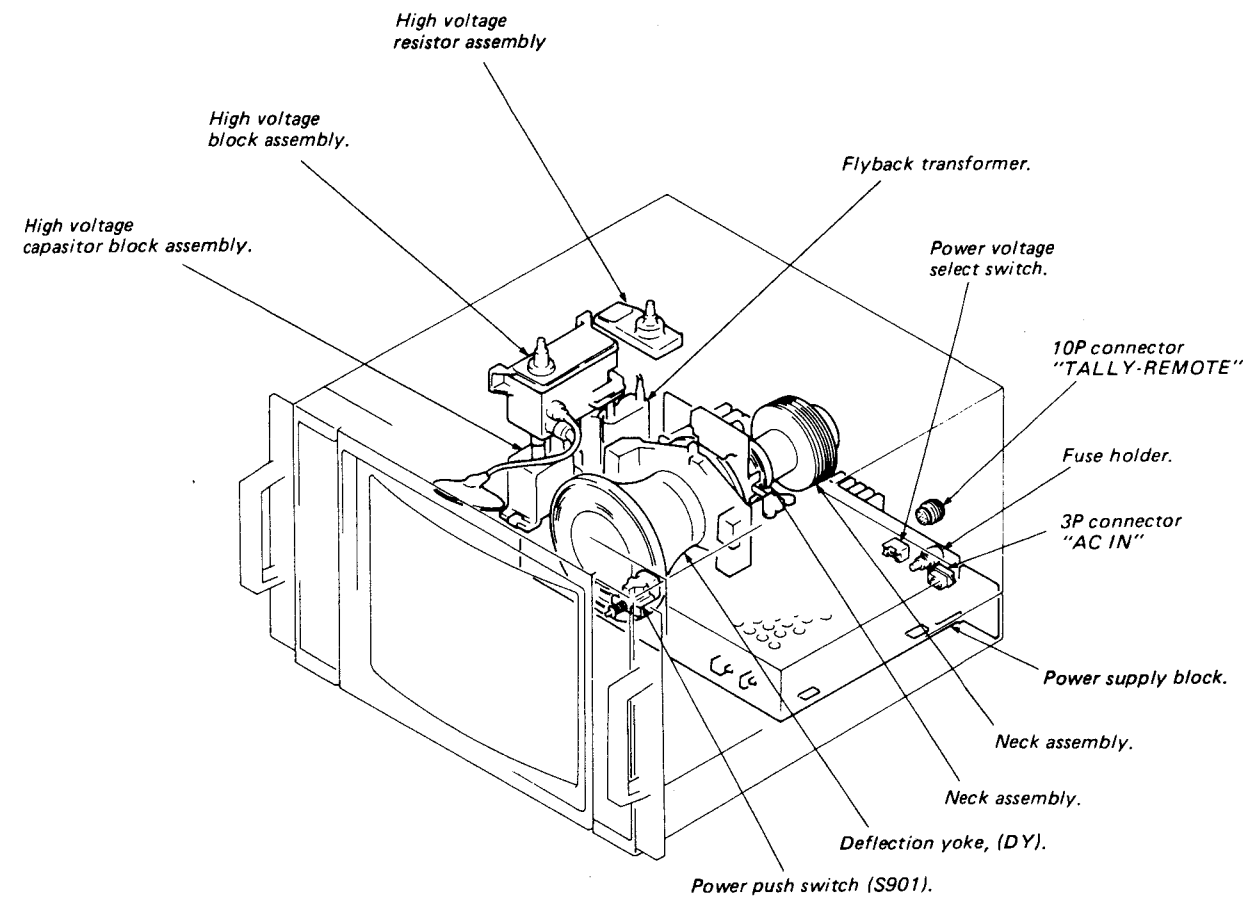
Figure 34

BLOCK DIAGRAM OF PA BOARD

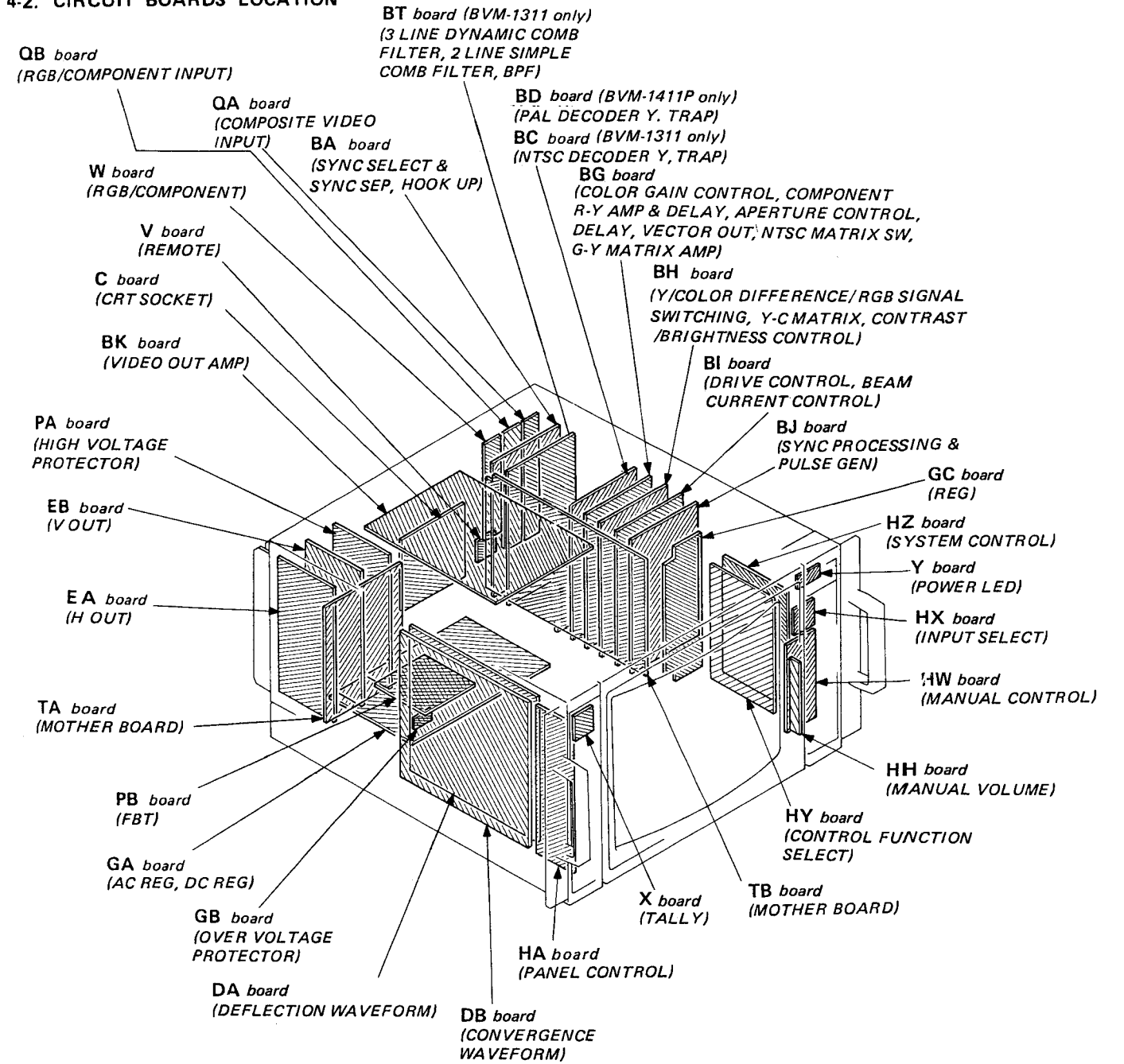


SECTION 4 ADJUSTMENTS

4-1. INTERNAL VIEW



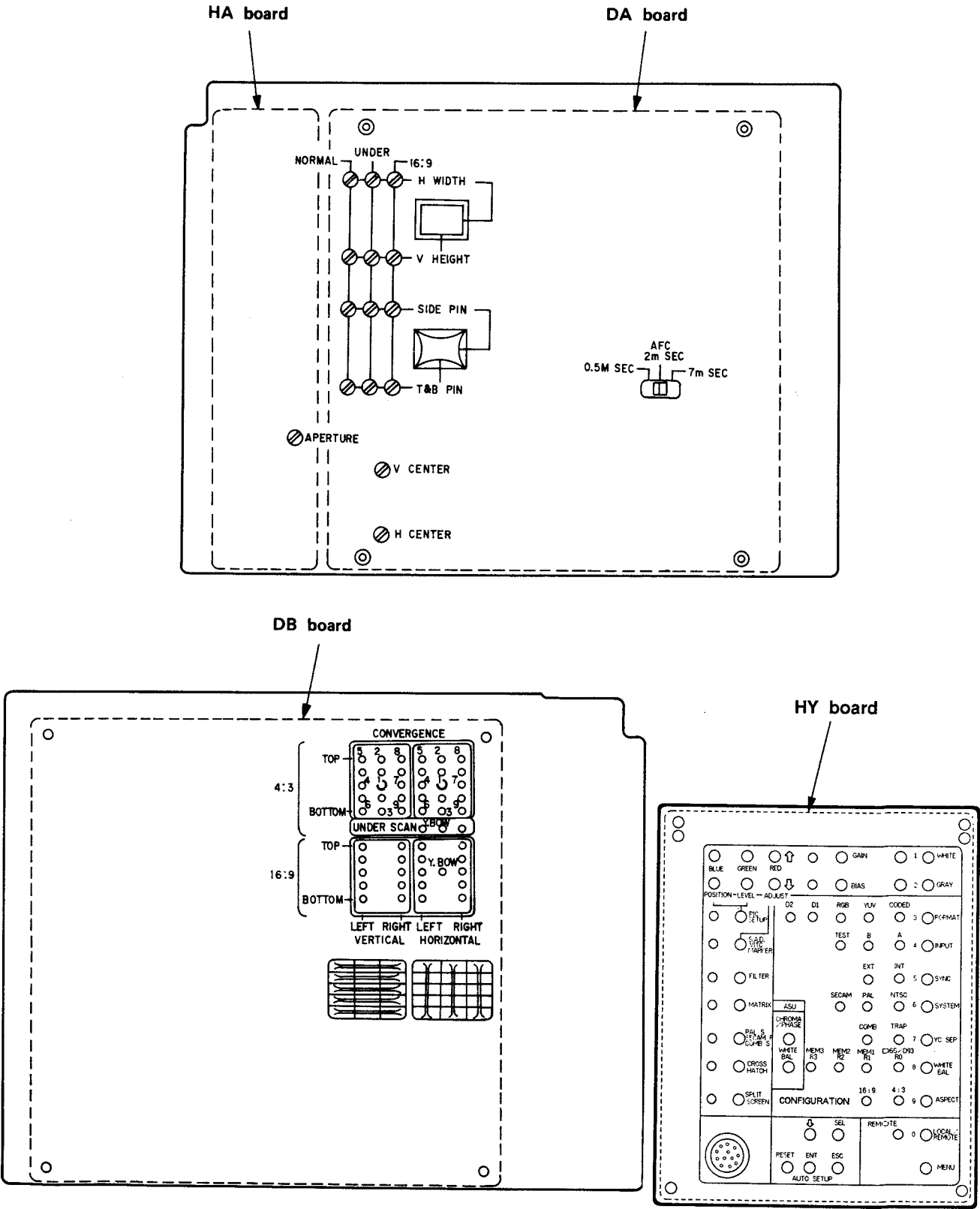
4-2. CIRCUIT BOARDS LOCATION



4-3. QUICK REFERENCE

BOARD SECTION	BA	BC	BD	BG	BH	BI	BJ	BK	BT	C	DA	DB
CIRCUIT DESCRIPTION	3-1	3-19	3-21	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-17	—	3-31	3-27
ADJUSTMENTS	4-23 4-27	4-33	4-63	4-23 4-29	4-23	—	4-21 4-32 4-46	4-47	4-49	—	4-78	—
BLOCK DIAGRAM	3-2	3-20	3-22	3-4	3-5	3-7	3-9	3-13	3-17	—	3-33	3-28
MOUNTING DIAGRAM	5-7	5-17	5-25	5-27	5-35	5-37	5-45	5-47	5-12	5-74	5-55	5-57
SCHEMATIC DIAGRAM	5-9	5-19	5-22	5-29	5-32	5-39	5-42	5-49	5-15	5-77	5-52	5-59
ELECTRICAL PARTS LIST	7-1	7-4	7-18	7-5	7-8	7-11	7-13	7-15	7-21	7-31	7-35	7-38
BOARD SECTION	EA	EB	GA	GB	GC	HA	HH	HW	HX	HY	HZ	PA
CIRCUIT DESCRIPTION	3-35	3-23	3-25	3-25	—	—	—	—	—	—	—	3-37
ADJUSTMENTS	—	—	4-13	—	—	—	—	4-20	—	—	—	4-16
BLOCK DIAGRAM	3-36	3-24	3-26	3-26	—	—	—	—	—	—	—	3-38
MOUNTING DIAGRAM	5-62	5-63	5-69	5-68	5-90	5-81	5-81	5-81	5-96	5-81	5-87	5-75
SCHEMATIC DIAGRAM	5-65	5-65	5-71	5-71	5-93	5-79	5-79	5-79	5-79	5-79	5-84	5-77
ELECTRICAL PARTS LIST	7-42	7-32	7-26	7-31	7-25	7-43	7-46	7-46	7-43	7-46	7-43	7-33
BOARD SECTION	PB	QA	QB	TA	TB	V	W	X	Y	Z		
CIRCUIT DESCRIPTION	3-37	3-1	3-1	—	—	—	—	—	—	—		
ADJUSTMENTS	—	—	—	—	—	—	—	—	—	—		
BLOCK DIAGRAM	3-38	3-2	3-2	—	—	—	—	—	—	—		
MOUNTING DIAGRAM	5-74	5-90	5-90	5-95	5-99	5-90	5-90	5-81	5-81	5-103		
SCHEMATIC DIAGRAM	5-77	5-93	5-93	5-97	5-101	5-93	5-93	5-79	5-79	—		
ELECTRICAL PARTS LIST	7-25	7-25	7-25	7-49	7-48	7-32	7-43	7-43	7-43	7-49		

4-4. SUB CONTROL PANEL LOCATION



4-5. SET-UP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by POT's on the sub control panel.
(Refer to pages 4-6, 4-7 and 4-9)

[Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410, 1411 Series).
2. COLOR ANALYZER
3. LUMINANCE METER

[Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Turn BRIGHTNESS and CONTRAST switch PRESET (□).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Set the purity knob to mechanical center as shown in Fig. 1-1.
(You can see through the hole.)

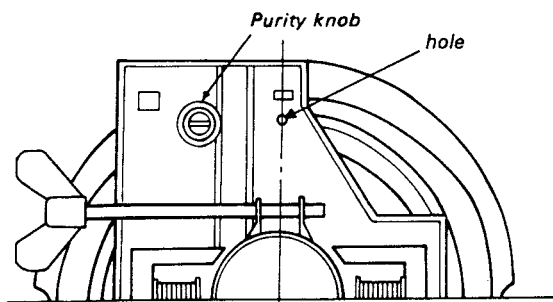


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

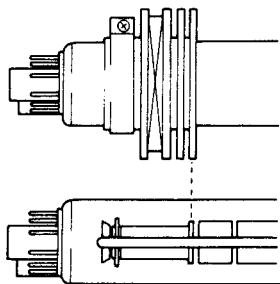


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL (L)) are in the IN position and G in the OUT position).
8. Turn purity knob as shown in Fig. 1-3 to bring the green on the center of the screen.

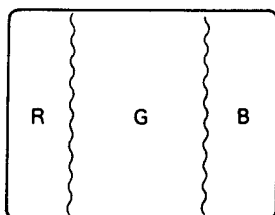


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL (L)) are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL (L)) are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
(Using an internal cross hatch signal (S29 on HY Boards), it is easy to adjust DY tilt.)
13. Secure the DY with the spacers. (Fig. 1-4)

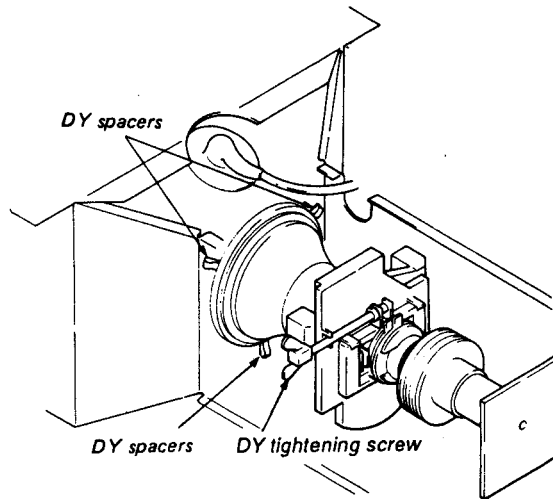
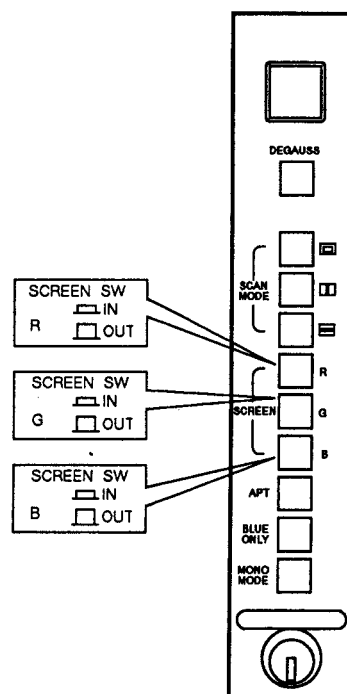


Fig. 1-4.

• Final check

After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.

FRONT PANEL (L)



[Focus adjustment]

1. Connect signal generator (TEKTRONIX 1410 and 1411 Series).
2. Input a dot or cross-hatch signals.
3. Adjust the FOCUS control for best focus in the central portion of the screen as shown in Fig. 1-5.

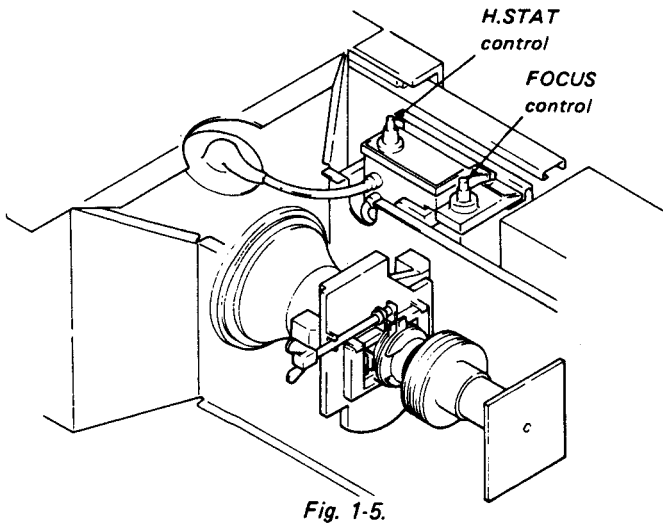


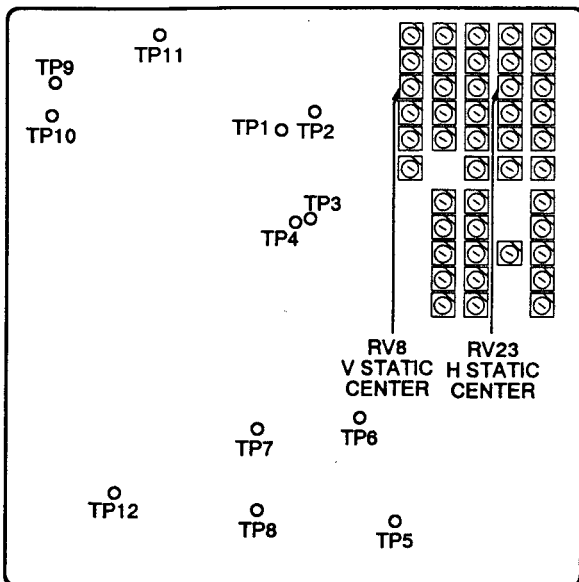
Fig. 1-5.

[Convergence Adjustment]

Preparation

1. Complete the signal generator connection and feed the dot and cross-hatch signals.
2. Set the CONTRAST and BRIGHTNESS controls at the points where the dots and the cross-hatch can be observed clearly.
3. Set the H. STATIC CENTER control (RV23) and V. STATIC CENTER control (RV8) on the DB board to mechanical center as shown in Fig. 1-6.

DB board



• Mechanical center

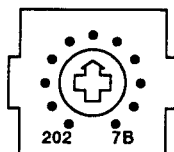
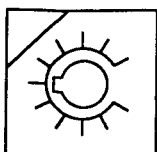


Fig. 1-6.

[Static Convergence]

• Horizontal Static Convergence

1. Adjust H. STAT control of HV BLOCK to match the convergence of red and green in the horizontal direction at screen center.
2. Perform the HMC correction when blue is out of convergence in the same direction on all over the screen.
3. Move the BMC magnet to correct H. static convergence as shown in Fig. 1-8.

• Vertical Static Convergence

1. Adjust the V. STATIC CENTER (RV8) on the DB board to match the convergence of red and green in the vertical direction at screen center.
2. When blue is out of the convergence in the same direction all over the screen, perform the VMC correction.
3. Move the BMC magnet to correct static convergence as shown in Fig. 1-9.

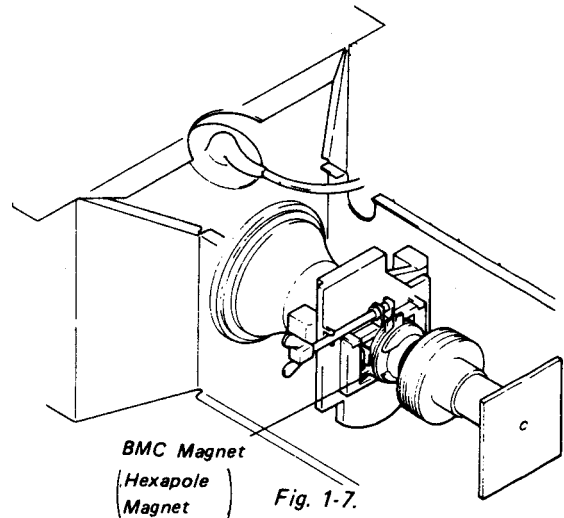
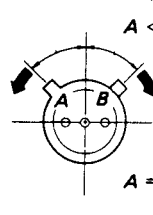


Fig. 1-7.

• HMC and VMC correction for BMC Magnet.

1. HMC (Horizontal, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

HMC correction (A)



HMC correction (B)

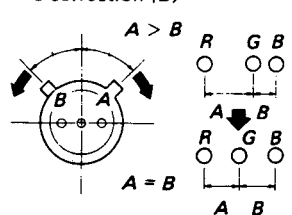
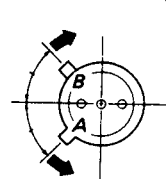


Fig. 1-8.

2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

VMC correction (A)



VMC correction (B)

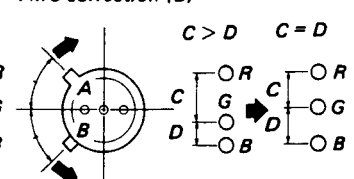


Fig. 1-9.

[DYNAMIC CONVERGENCE]

• Convergence adjustment of 4:3 aspect picture.

1. ASPECT button on the HY board 4:3
2. Adjust CONVERGENCE controls (RV1 ~ RV30) on the DB board as shown in Fig. 1-10.
3. It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move)
4. Adjust the convergence corresponding to the portion of the screen as follows.
5. Always match the convergence in the order of center → on Y axis → on X axis → corner against the screen.

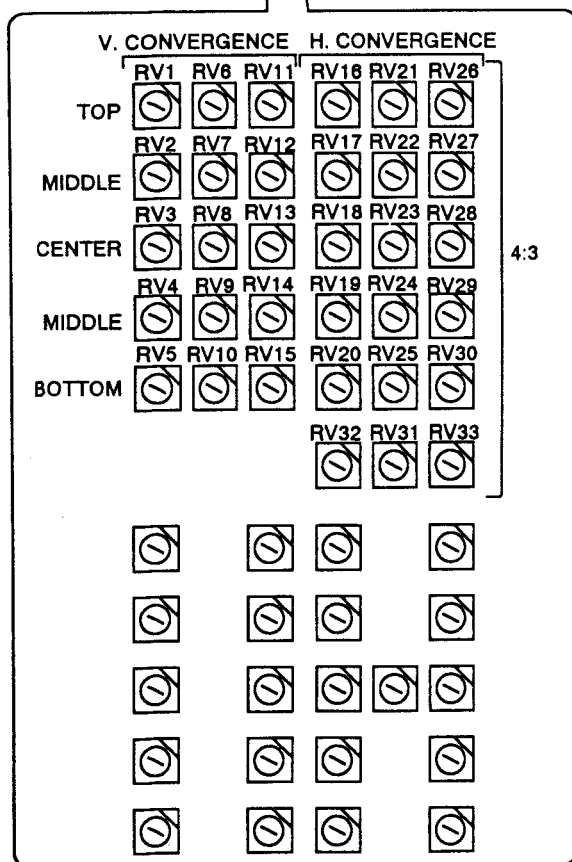
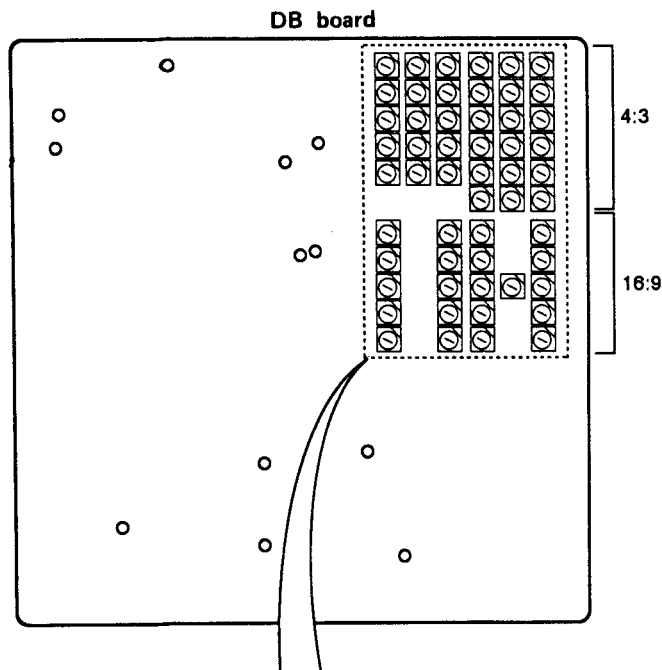


Fig. 1-10.

[CONVERGENCE PROCESS]

1. UNDER SCAN switch NOR (□)
2. Adjust RV8 and RV23 on the DB board to coincide with R, G and B dots at the center of the screen as shown in Fig. 1-11.

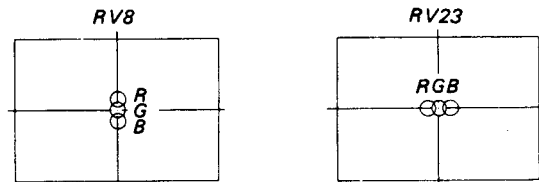


Fig. 1-11.

3. Adjust RV6, RV10, RV21, and RV25 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-12.

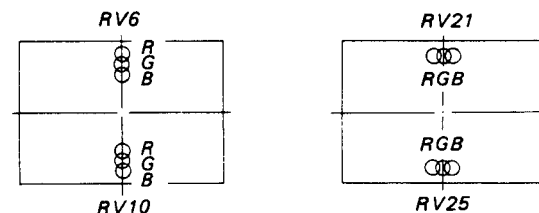


Fig. 1-12.

4. Adjust RV3, RV13 and RV18, RV28 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-13.

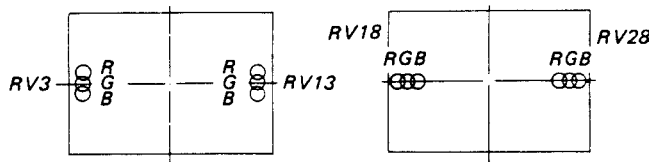


Fig. 1-13.

5. Adjust RV1, RV5 and RV11, RV15 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-14.

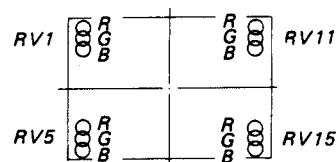


Fig. 1-14.

6. Adjust RV16, RV20 and RV26, RV30 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-15.

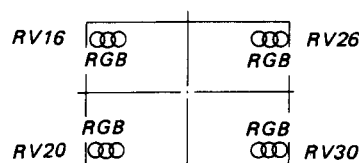


Fig. 1-15.

- Adjust RV7, RV9 and RV22, RV24 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-16.

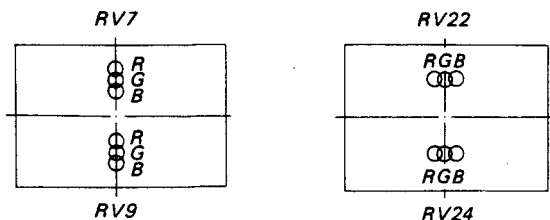


Fig. 1-16.

- Adjust RV2, RV4 and RV12, RV14 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-17.

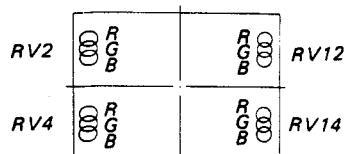


Fig. 1-17.

- Adjust RV17, RV19 and RV27, RV29 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-18.

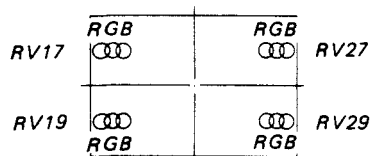


Fig. 1-18.

- UNEDR SCAN switch UNDER ()
- Adjust RV31 (UNDER SCAN Y. BOW) on the DB board to coincide with the R, G and B dots as shown in Fig. 1-19.

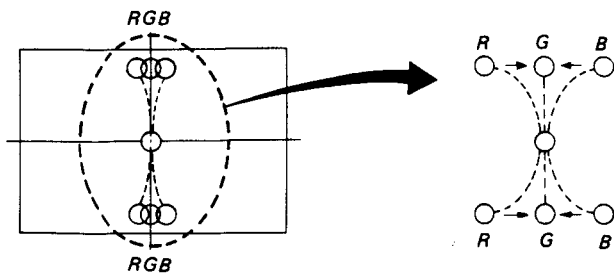


Fig. 1-19.

- Adjust RV32 and RV33 (UNDER SCAN H. AMP) on the DB board to coincide with the R, G and B dots as shown in Fig. 1-20.

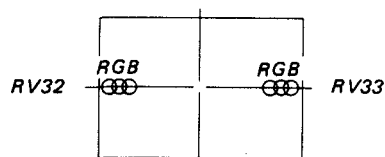
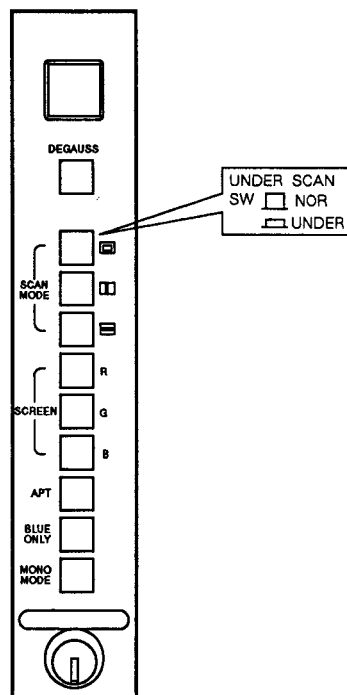
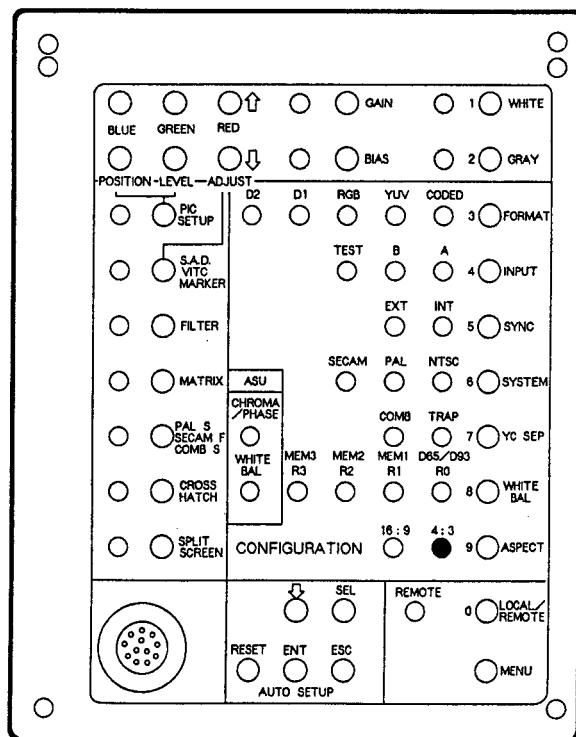


Fig. 1-20.

FRONT PANEL (L)



SUB CONTROL PANEL (HY board)



[DYNAMIC CONVERGENCE]

● Convergence adjustment of 16:9 aspect picture.

NOTE:

- Adjust the convergence of the 16:9 aspect picture after convergence adjustment of the 4:3 aspect picture is completed.
- 1. ASPECT button on the HY board 16:9
- 2. Adjust CONVERGENCE controls (RV41 ~ RV60) on the DB board as shown in Fig. 1-21.
- 3. It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move)
- 4. Adjust the convergence corresponding to the portion of the screen as follows.
- 5. Always match the convergence in the order of center → on Y axis → on X axis → corner against the screen.

[CONVERGENCE PROCESS]

1. UNDER SCAN switch NOR (□)
2. Adjust RV43, RV48 and RV53, RV58 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-22.

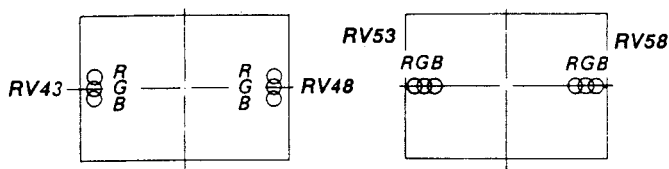


Fig. 1-22

3. Adjust RV41, RV45 and RV46, RV50 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-23.

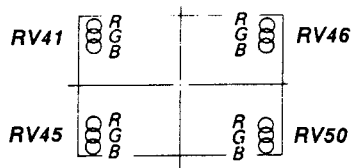


Fig. 1-23

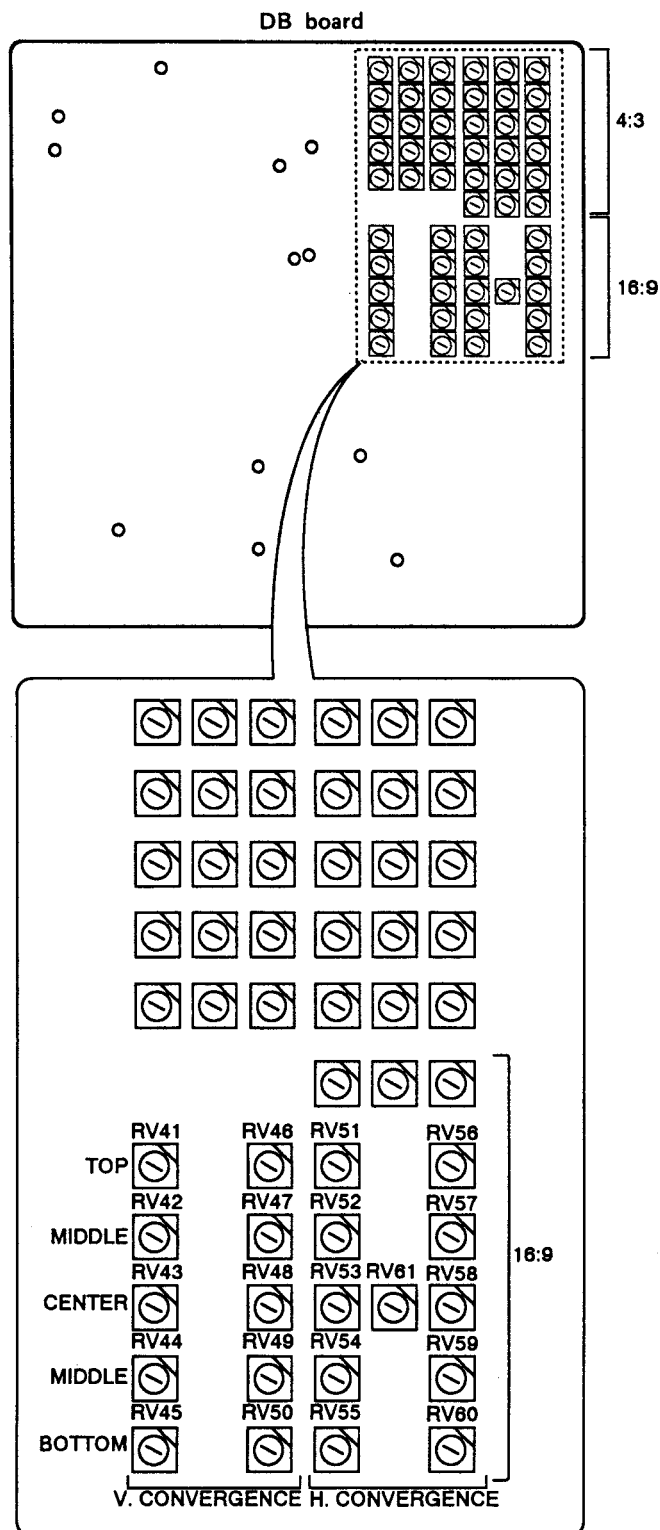


Fig.1-21

- Adjust RV51, RV55 and RV56, RV60 on the DB board coincide with the R, G and B dots as shown in Fig. 1-24.

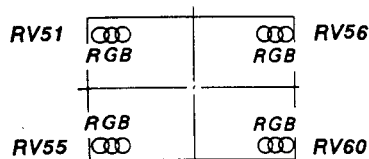


Fig. 1-24

- Adjust RV61 (Y. BOW) on the DB board to coincide with the R, G and B dots as shown in Fig. 1-27.

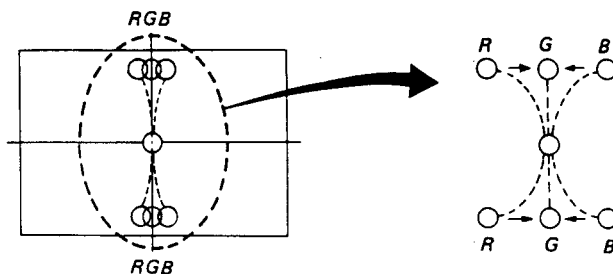


Fig. 1-27

- Adjust RV42, RV44 and RV47, RV49 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-25.

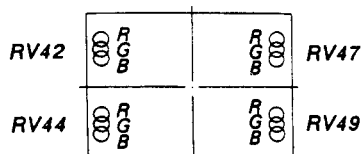


Fig. 1-25

- Adjust RV52, RV54 and RV57, RV59 on the DB board to coincide with the R, G and B dots as shown in Fig. 1-26.

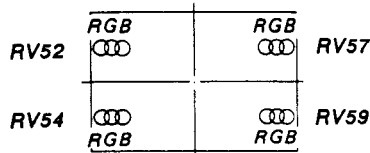
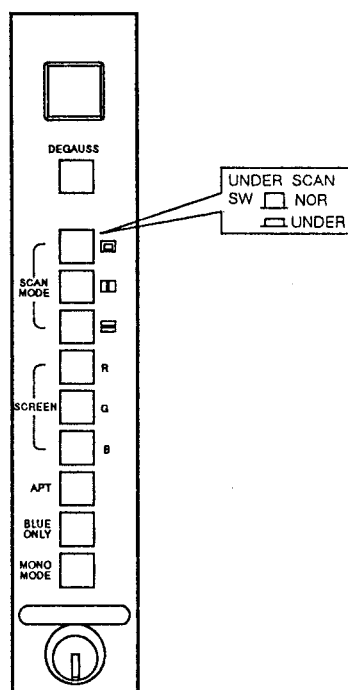
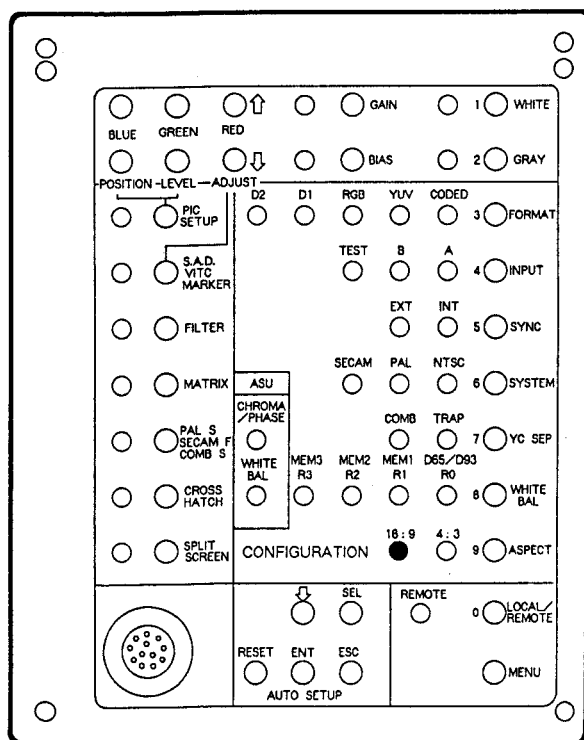


Fig. 1-26

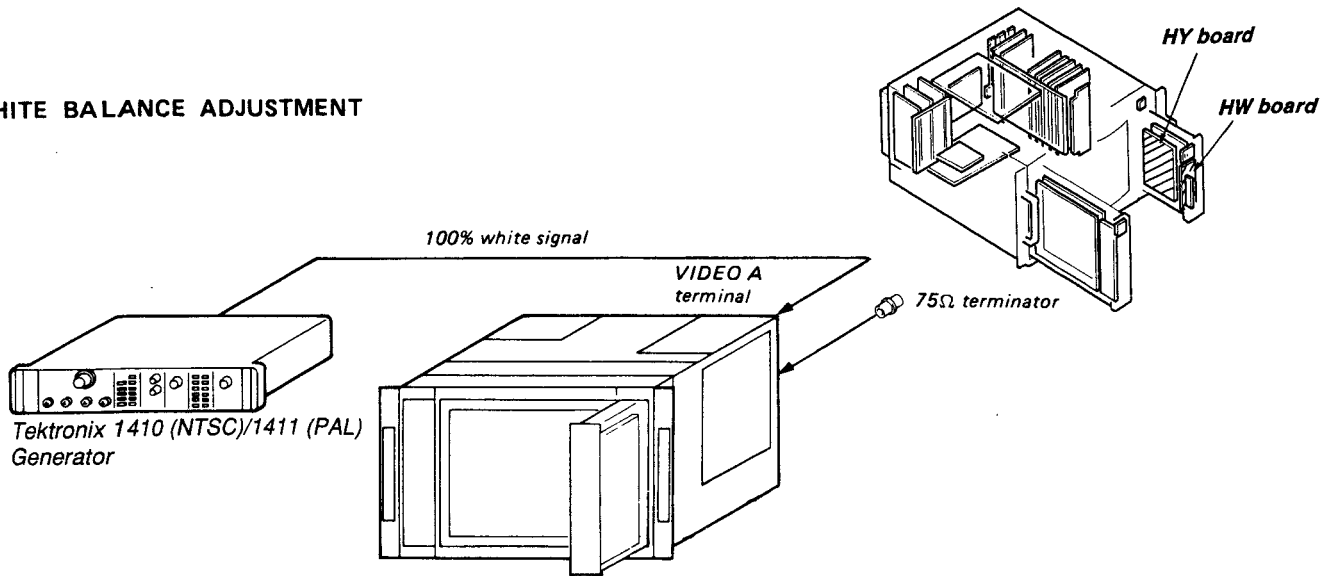
FRONT PANEL (L)



SUB CONTROL PANEL (HY board)

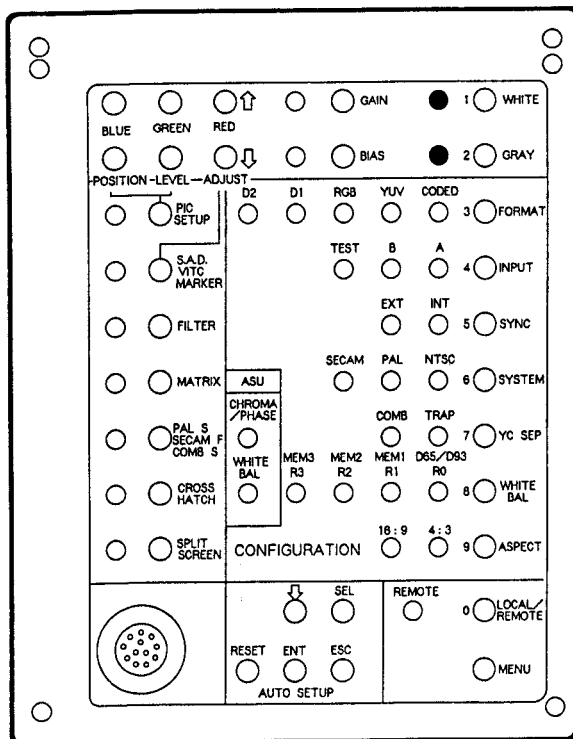


WHITE BALANCE ADJUSTMENT

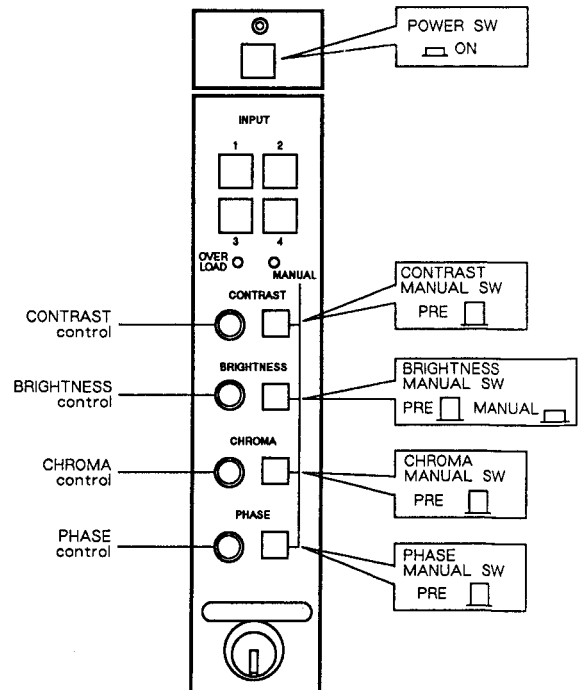


1. Input 100% white signal to VIDEO A connector.
2. Gray button ON
3. BRIGHTNESS MANUAL switch MANUAL. (☐)
CONTRAST MANUAL switch MANUAL. (☐)
4. Turn BRIGHT and CONTRAST to become 100 with PRESET MENU.
SAVE the DATA.
5. Switch off the MANUAL swithes of CONTRAST and BRIGHT.
6. Turn BIAS controls (S21:Red, S23:Green, S32:Blue) on the HY board to adjust the BRIGHTNESS to 0.5NIT and white balance using COLOR ANALYZER and check 0.5NIT by LUMINANCE METER.
7. White button ON
8. Turn GAIN controls (S20:Red, S22:Green, S31:Blue) on The HY board to adjust the BRITHNESS at HIGH LIGHT to 103 NIT and white balance using COLOR ANALYZER and check 103 NIT by LUMINANCE METER.
9. Repeat procedure steps 6 to 8 if necessary.

SUB CONTROL PANEL (HY board)



FRONT PANEL (R)



+B PROTECTOR (■ R52 R53)

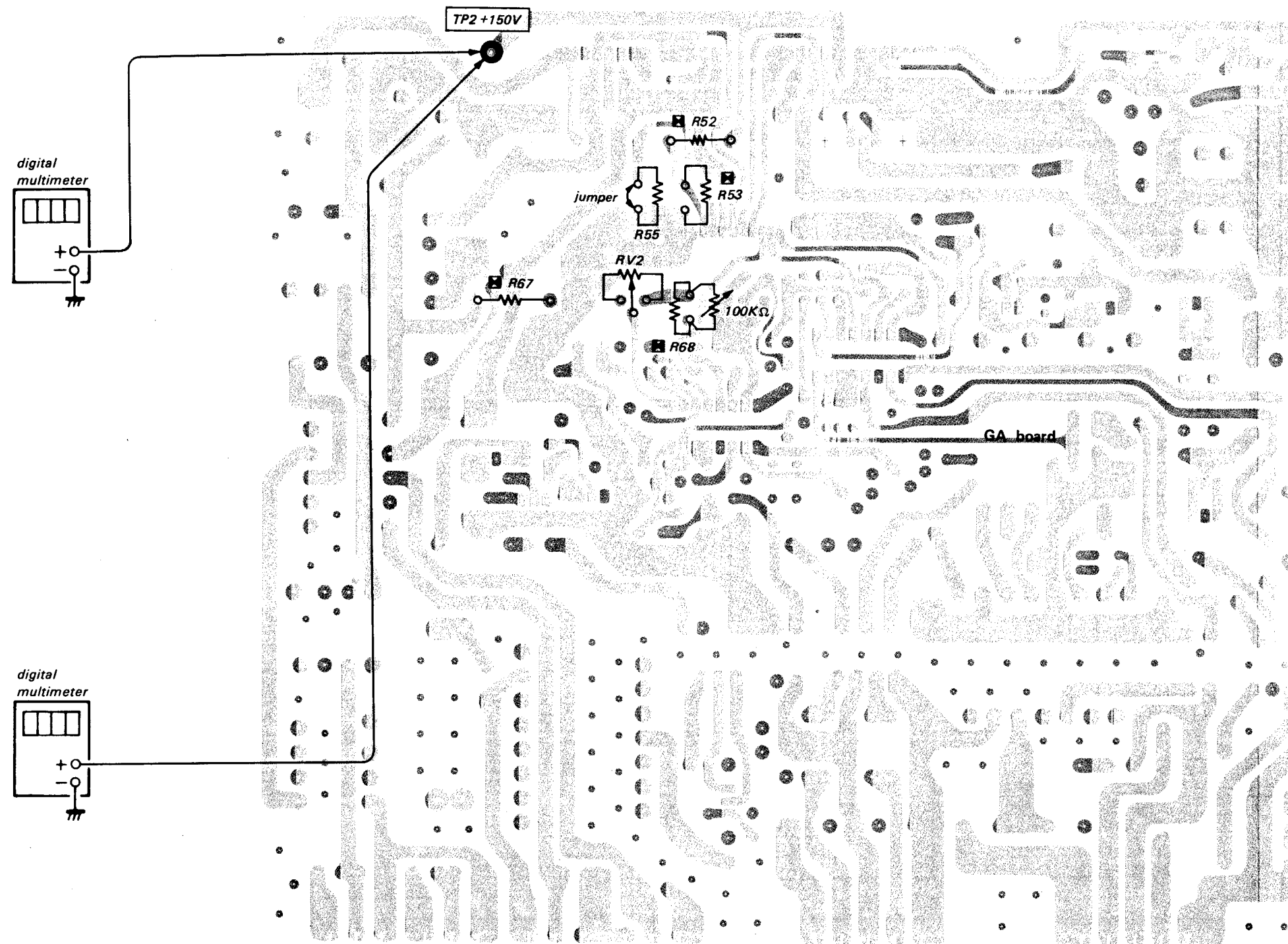
When replacing the following components (marked ■ on the schematic diagram), make this confirmation.

- GA Board . . R52, R53, Q14, Q13
- GB Board . . D5, D6, R5, Q4, Q3, D7, R4, Q5, D8, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Short-circuit R55 on GA Board.
3. Connect 100k Ω variable resistor with R68 in parallel on GA Board.
4. Confirm that the reading on the digital multimeter drops abruptly from +182.0V ~ +216.0V to 0V by turning the 100k Ω variable resistor so that the value of the resistor decrease from maximum value.
5. If step 4 isn't satisfied, check that the mounted components are correct.

**+B MAX CONFIRMATION** (■ R67, R68)

When replacing the following components (marked ■ on the schematic diagram), make this confirmation.

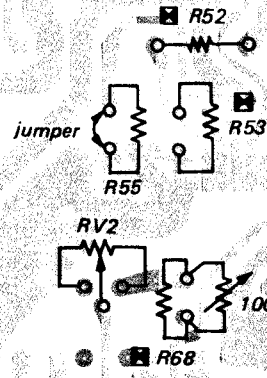
- GA Board . . R67, RV2, R68, IC3, C59, R78

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Confirm that the reading on the digital multimeter is between +155.0V and +175.0V when RV2 variable resistor is turned to fully clockwise.
3. After confirmation, make the reading on the digital multimeter into +150.0V $\pm$ 0.5V by adjusting RV2 on GA Board.

TP2 +150V



GA board

HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

- ☒ DCT Block
- ☒ PA Board . . . IC2, R201, R202, D215, R225, R226, R227, R228, D214, R229, R230, D207, R213, R214, D205, R243

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeters to TP1 and ⑦ pin of IC4 and IHV(1) on PA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

IN case of using electrostatic voltmeter

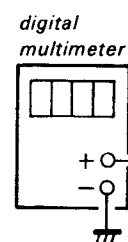
1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counter-clockwise. (manual button is IN)
2. Connect 200k Ω variable resistor with R125 in parallel on PA Board.
3. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 29.0kV ~ 27.0kV to 0V by turning slowly the 200k Ω variable resistor so that the value of the resistor decrease from maximum value.
4. If step 3 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3.
5. Set CONTRAST and BRIGHTNESS controls to fully clockwise. (maximum; the reading on the digital multimeter of IHV(1) on PA Board should be between -5.9V and -7.7V)
6. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 28.0kV ~ 26.0kV to 0V by turning slowly the 200k Ω variable resistor and check the difference of memorize voltage between in step 3 and 6 is over 400V.

In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counter-clockwise. (manual button is IN)

(☒ R227, R228)

2. Connect 200k Ω variable resistor with R125 in parallel on PA Board.
3. Confirm that the reading on the digital multimeter of TP1 on PA Board is between 9.10V and 9.30V.
4. If step 3 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3.
5. Confirm that the reading on the digital multimeter at ⑦ pin of IC4 on PA Board drop abruptly from between 9.10V and 9.35V by turning slowly the 200k Ω variable resistor.
6. If step 5 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3 through 5.
7. Set CONTRAST and BRIGHTNESS controls fully clockwise. (maximum; the reading on the digital multimeter of IHV(1) on PA Board should be between -5.9V and -7.7V)
8. Confirm that the reading on the digital multimeter at ⑦ pin of IC4 on PA Board drops abruptly from between 9.05V and 8.85V by turning slowly the 200k Ω variable resistor so that the value of the resistor decrease from maximum value.
9. If step 8 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3 through 8.



BEAM CURRENT PROTECTOR 1 CONFIRMATION

(☒ R222)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ PA Board . . . R201, R202, D215, R220, R221, R222, R223, R224, IC2, D206, R213, R214, D205, R242
- PB Board . . . FBT, R1, R2

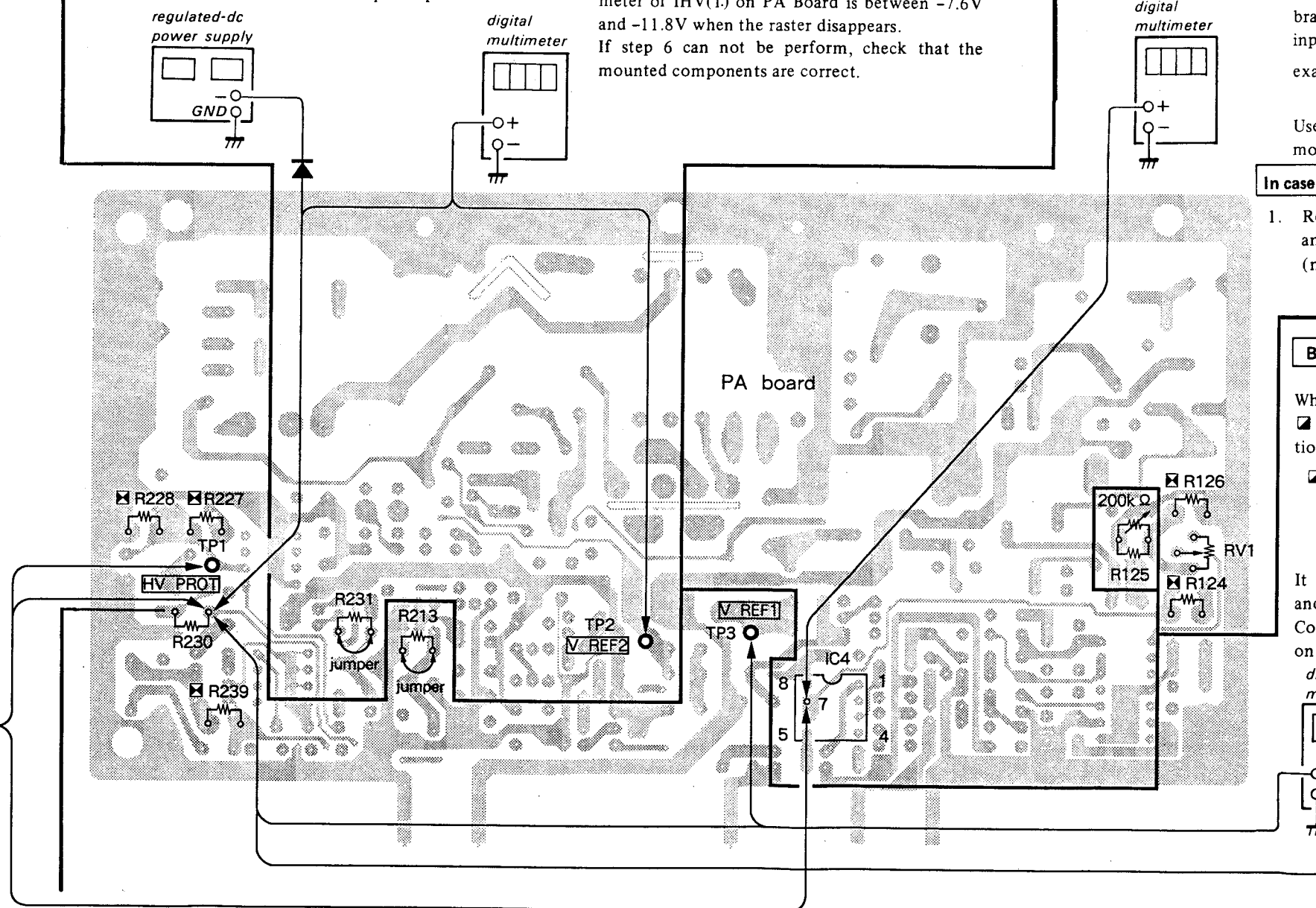
It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation.

Connect the digital multimeters to TP2 and IHV(1) on PA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position.

regulated-dc power supply

digital multimeter



HIGH VOLTAGE TION

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- PA Bo

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BEAM CURRENT PROTECTOR 1 CONFIRMATION

(☒ R222)

When replacing the following components (marked on the schematic diagram), make this confirmation.

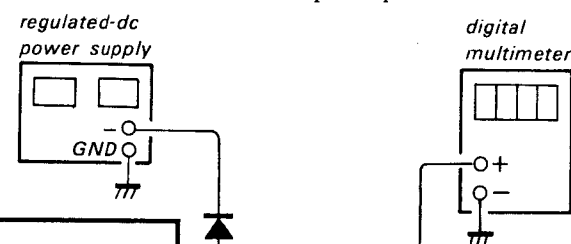
- ☒ PA Board ... R201, R202, D215, R220, R221, R222, R223, R224, IC2, D206, R213, R214, D205, R242
- PB Board ... FBT, R1, R2

It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation.

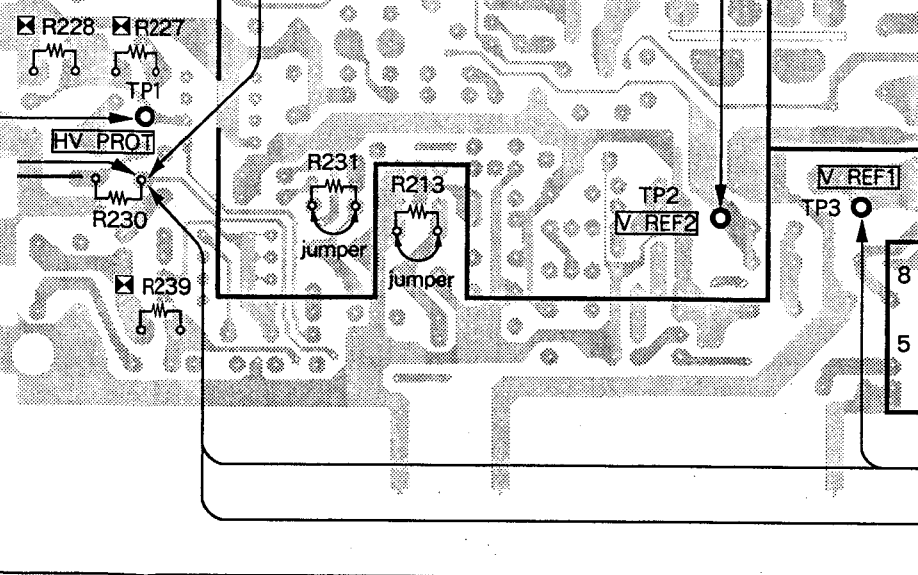
Connect the digital multimeters to TP2 and IHV(1) on PA Board.

Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position.

2. Confirm that the reading on the digital multimeter of TP2 on PA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP2 is more than +32.5V, 1M Ω $\pm$ 1% 1/6W (metal-film) should be mounted at the portion of R222 on PA Board.
(Normally in this position no component is mounted.)
4. Short-circuit R213.
5. Connect a regulated dc power supply to IHV(1) through a diode. (for example, 1SS119).
6. Confirm that the reading on the digital multimeter of IHV(1) on PA Board is between -7.6V and -11.8V when the raster disappears.
If step 6 can not be perform, check that the mounted components are correct.



PA board



HIGH VOLTAGE REGULATOR CONFIRMATION

(☒ R124, R126)

When replacing the following components (marked on the schematic diagram), make this adjustment.

- ☒ DCT Block

PA Board ... IC4, R123, R124, RV1, R125, R126, IC1, R203, R204, D216, R137, R138, R136

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeters to ⑦ pin of IC4 on PA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

In case of using an electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out.)

2. Turn RV1 on the PA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the reading on the electrostatic voltmeter is between 25.30kV and 25.50kV.
4. If necessary, select the value of R124 and R126 (1/6W metal-film) and repeat above step 2 through 4.
5. After confirmation, adjust RV1 for 25.0kV $\pm$ 0.05kV on the electrostatic voltmeter.

In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out.)
2. Turn RV1 on the PA Board for a maximum reading on the digital multimeter at the ⑦ pin of IC4 on PA Board. (Fully clockwise)
3. Confirm that the reading on the digital multimeter is between +8.05V and +8.25V.
4. If necessary, select the value of R124 and R126 (1/6W metal-film) and repeat step 2 through 4.
5. After confirmation, adjust RV1 for +8.08V $\pm$ 0.05V on the digital multimeter.

BEAM CURRENT PROTECTOR 2 (☒ R239)

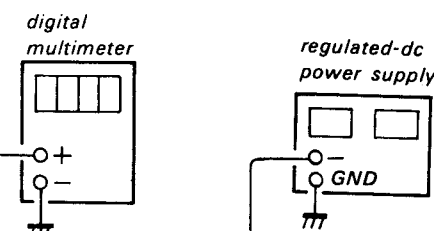
When replacing the following components (marked on the schematic diagram), make this confirmation.

- ☒ PA Board ... R203, R204, D216, R237, R238, R239, R240, R241, IC3, R231, R232, D204, R247

PB Board ... FBT, R3, R4

It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation.

Connect the digital multimeters to TP3 and IHV(1) on PA Board.



1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is OUT)
2. Confirm that the reading on the digital multimeter of TP3 on PA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP3 is more than +32.5V, 1M Ω $\pm$ 1% 1/6W (metal-film) should be mounted at the portion of R239 on PA Board.
(Normally in this portion no component is mounted.)
4. Short-circuit R213.
5. Connect a regulated dc power supply to IHV(1) through a diode. (For example, 1SS119 etc.)
6. Confirm that the reading on the digital multimeter of IHV(1) on PA Board is between -7.6V and -11.8V when the raster disappears.
7. If step 6. can not be performed, check that the mounted components are correct.

4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

FRONT PANEL (R)

- | | | |
|----------------------------------|--------|----------|
| • INPUT selector | 1 | HX board |
| • CONTRAST MANUAL switch | PRESET | HW board |
| • BRIGHTNESS MANUAL switch | PRESET | |
| • CHROMA MANUAL switch | PRESET | |
| • PHASE MANUAL switch | PRESET | |

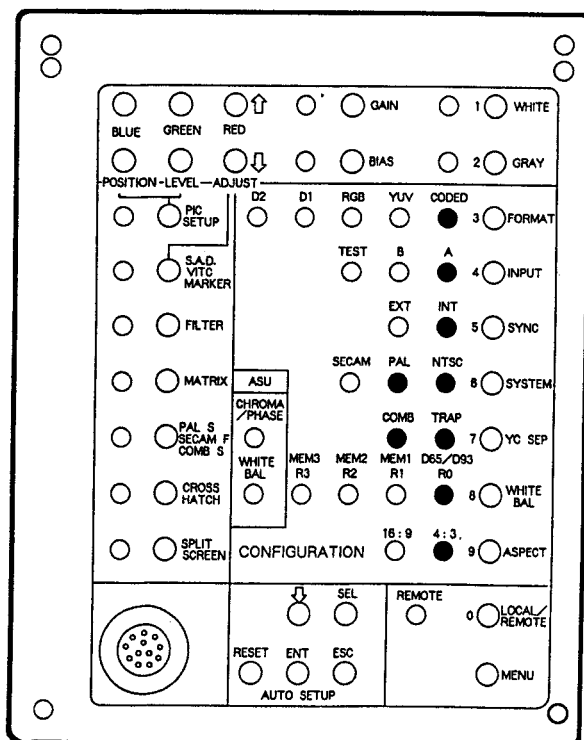
FRONT PANEL (L)

- | | | |
|---|--|------|
| • | SCAN MODE switch | |
| | ☒ H. DELAY | NOR |
| | ☒ V. DELAY | NOR |
| | ☒ UNDER SCAN | NOR |
| • | SCREEN switch (R) | NOR |
| • | SCREEN switch (G) | NOR |
| • | SCREEN switch (B) | NOR |
| • | APT switch | NOR |
| • | BLUE ONLY switch | NOR |
| • | MODE selector | AUTO |
- HA board

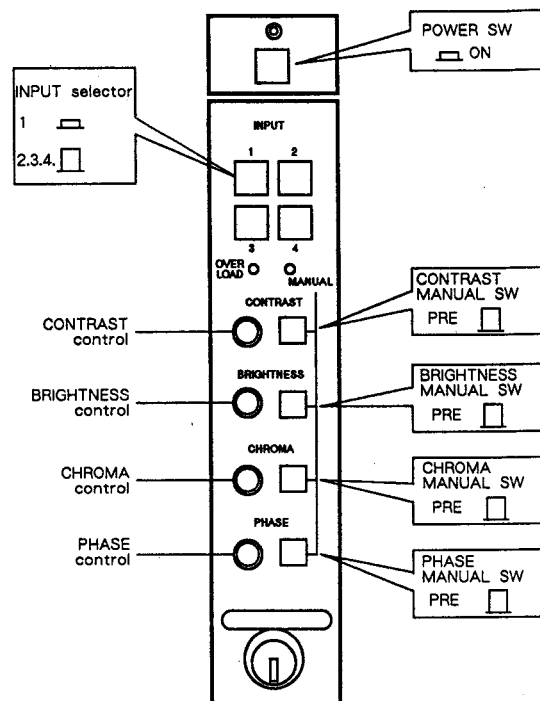
SUB CONTROL PANEL

- **FORMAT button** CODED
- **INPUT button** A
- **SYNC button** INT
- **COLOR SYSTEM button** NTSC (BVM-1311)
PAL (BVM-1411P)
- **YC SEP button** COMB (BVM-1311)
TRAP (BVM-1411P)
- **WHITE BALANCE button** D65/D93
- **ASPECT button** 4 : 3
- **PIC SETUP button** OFF
- **SAD/VITC/MARKER button** OFF
- **FILTER button** OFF
- **MATRIX button** OFF
- **PAL S/SECAM F/COMB S button** OFF
- **CROSS HATCH button** OFF
- **SPLIT SCREEN button** OFF
- **WHITE button** OFF
- **GRAY button** OFF
- **AFC switch** 2m set

SUB CONTROL PANEL (HY board)



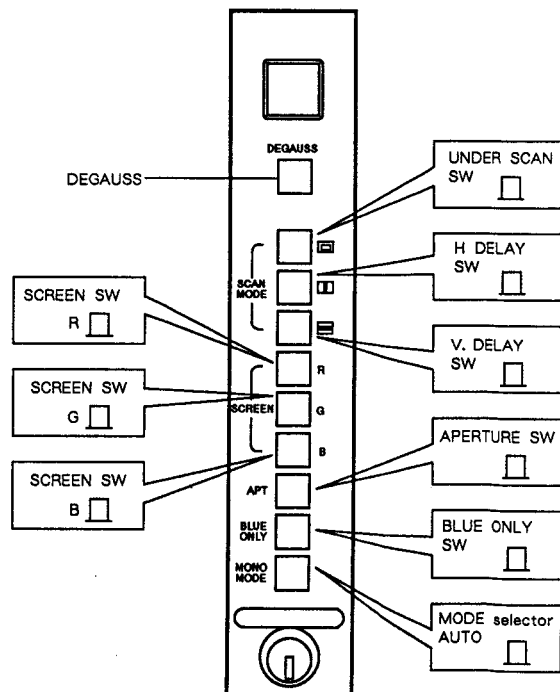
FRONT PANEL (R)



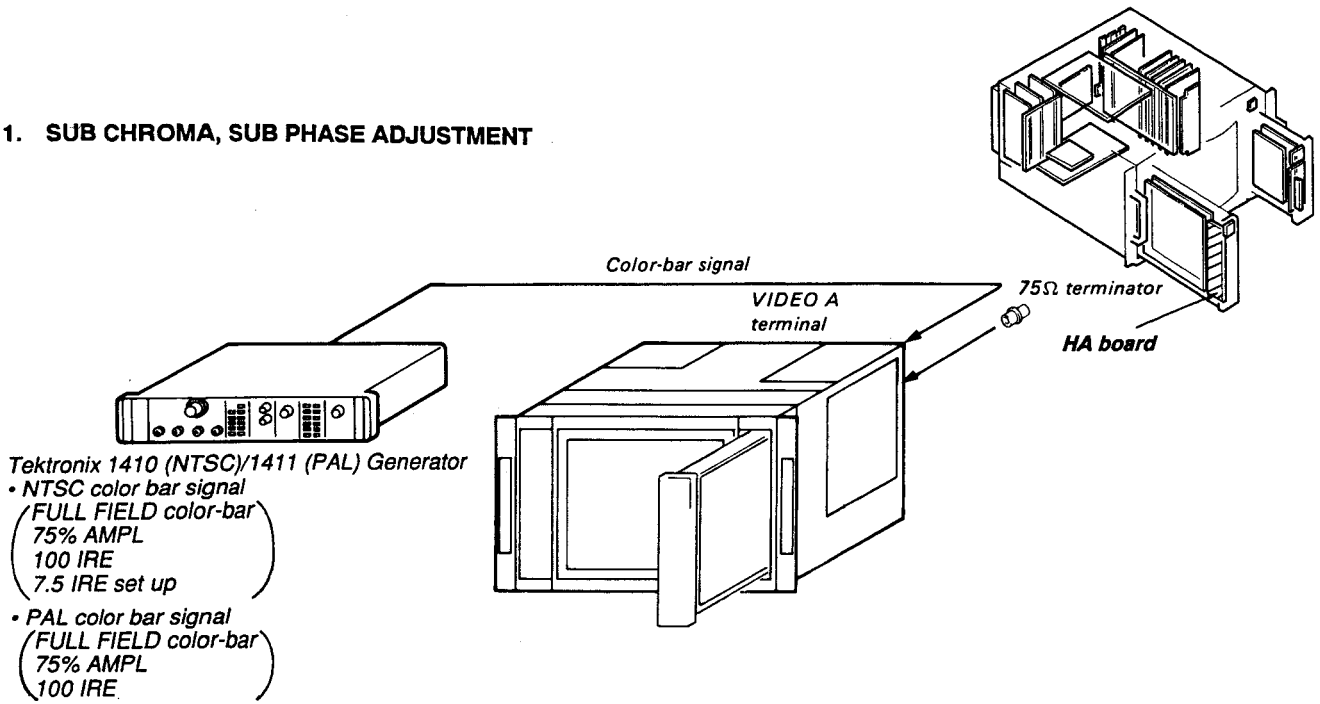
HY board

DA board

FRONT PANEL (L)

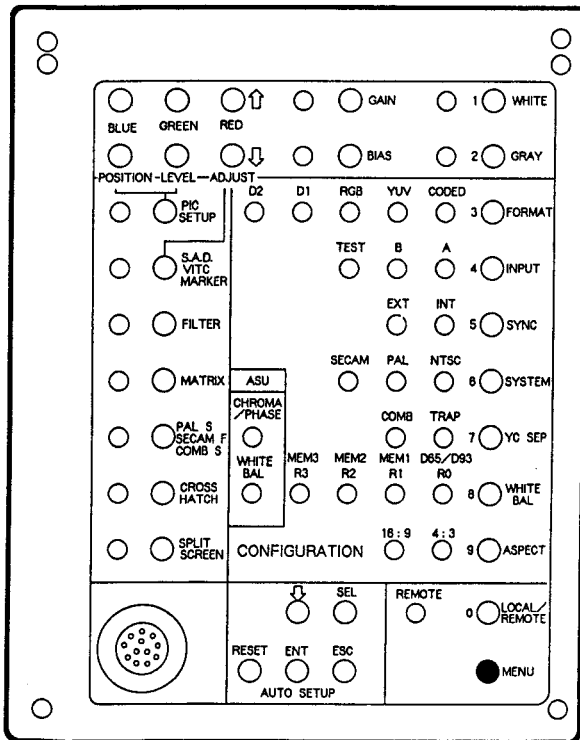


1. SUB CHROMA, SUB PHASE ADJUSTMENT

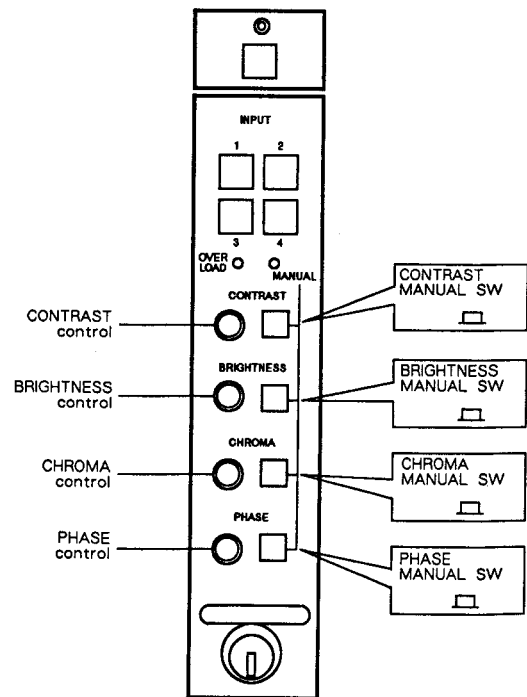


1. Press the MENU switch to select the PRESET menu.
2. CONTRAST, BRIGHT, CHROMA, PHASE MANUAL switch (FRONT PANEL).....MANUAL
3. Turn each volume control to adjust so that the value on the screen becomes 100.
4. Save the DATA.

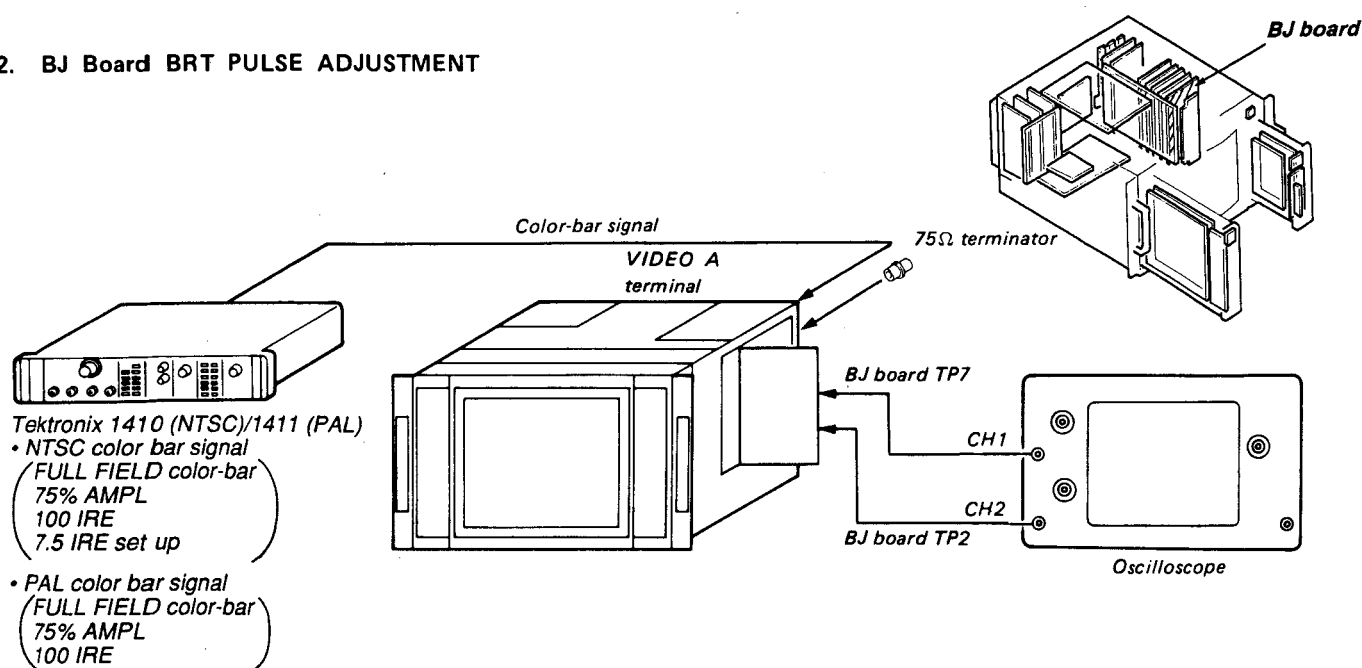
SUB CONTROL PANEL (HY board)



FRONT PANEL (R)



2. BJ Board BRT PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

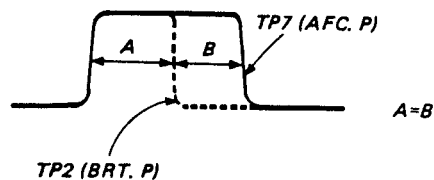
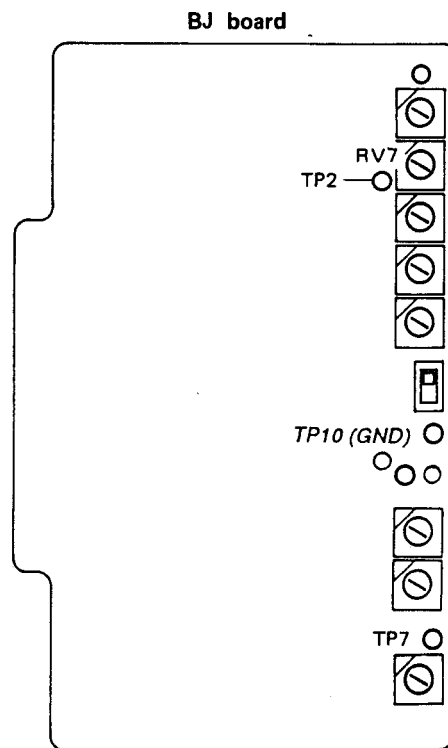
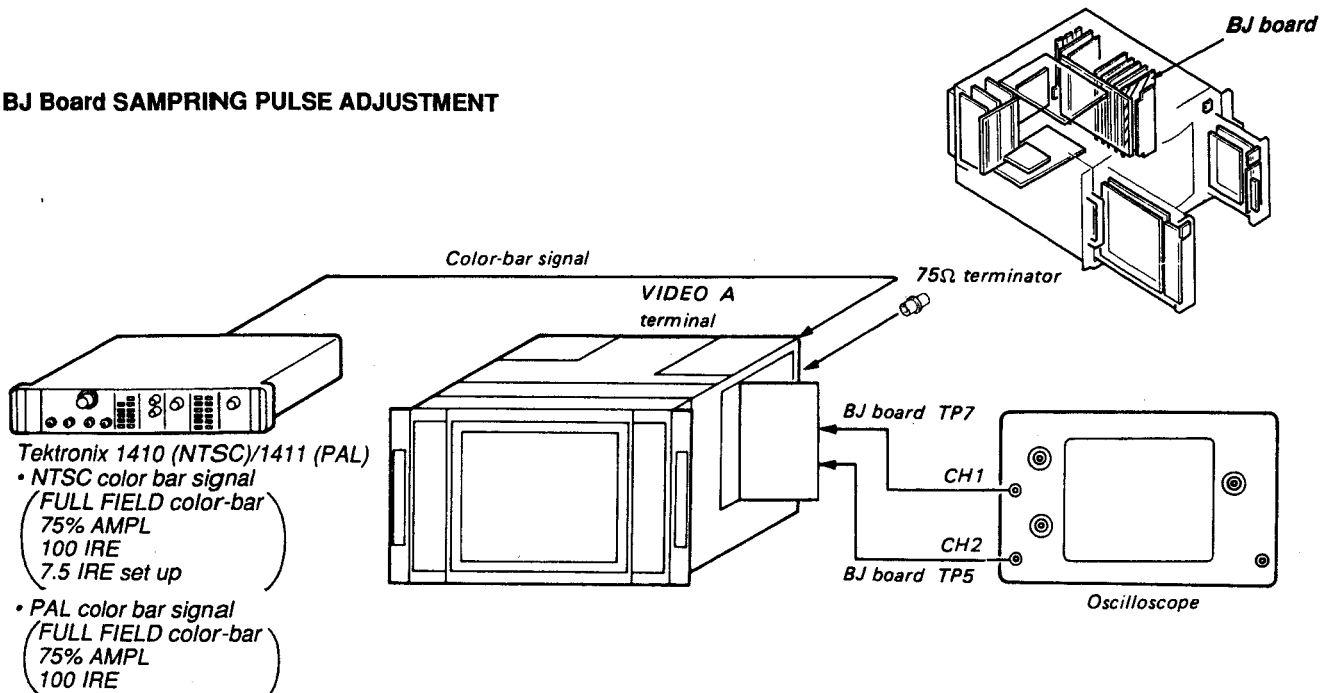


Fig. 2-1



BJ Board SAMPRING PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an osilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

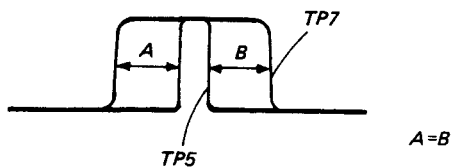
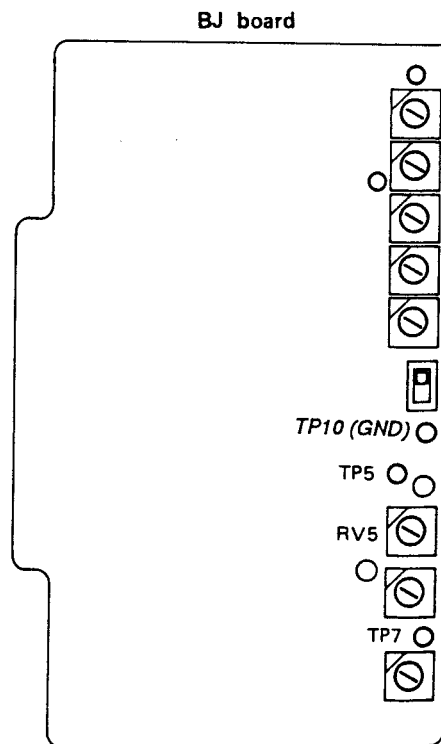
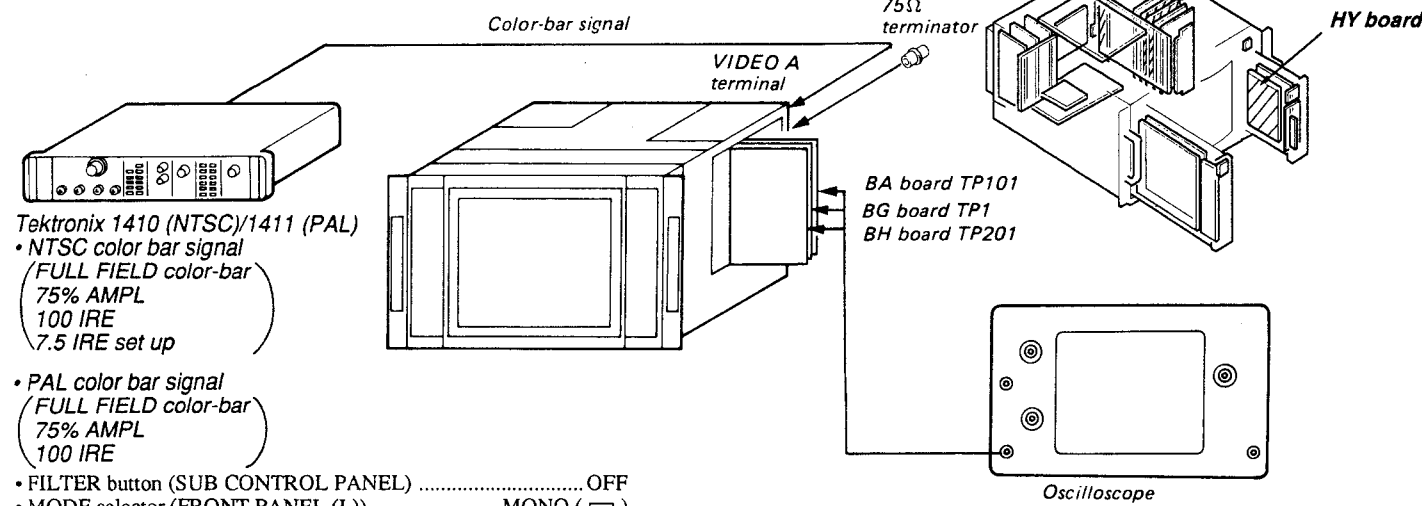


Fig. 2-2

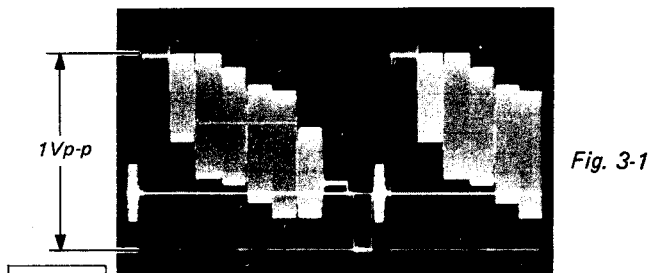


3. EACH CHANNEL LEVEL ADJUSTMENT



BA board

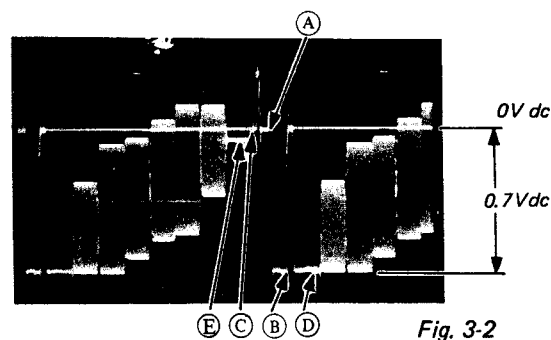
1. Input a color-bar signal to VIDEO A terminal to the set.
2. Connect an oscilloscope to the TP101 of BA board.
3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.



BG board

4. Connect an oscilloscope to the TP1 of BG board.
5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
6. Connect an oscilloscope to the TP201 of BH board.

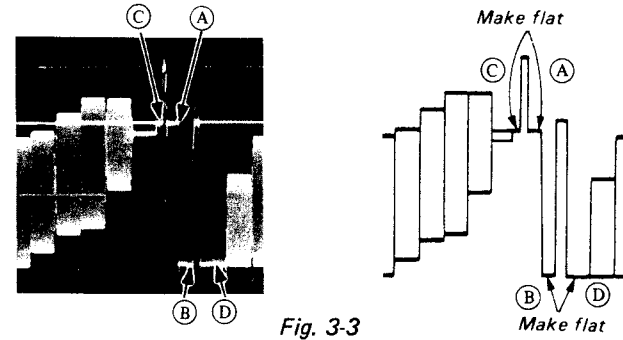
7. Adjust FRONT BRT VR so that (A) (black level) is 0V DC as shown in Fig. 3-2.
8. Adjust FRONT CONT VR so that (B) (100% white level) is -0.7V DC as shown in Fig. 3-2.



- (A) Black level
 (B) 100% White level
 (C) 0 IRE level
 (D) 100 IRE level
 (E) 7.5 IRE level

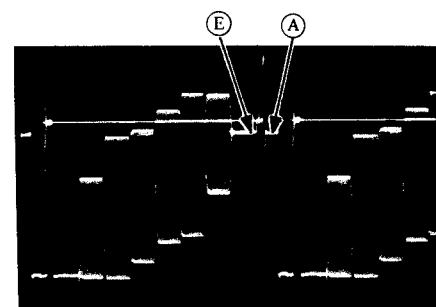
BH board

9. S2 (BH Board) 0 IRE
 Adjust RV1 of BH board so that the (C) (0 IRE level) coincides with (A) (Black level) as shown in Fig. 3-3.
10. Adjust RV3 of BH board so that the (D) (100 IRE level) coincides with (B) (100% white level) as shown in Fig. 3-3.

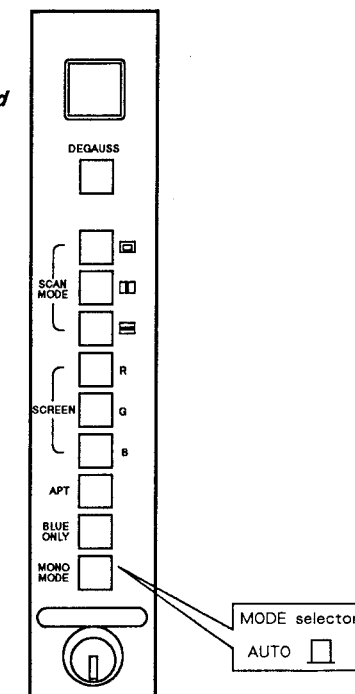


BH board

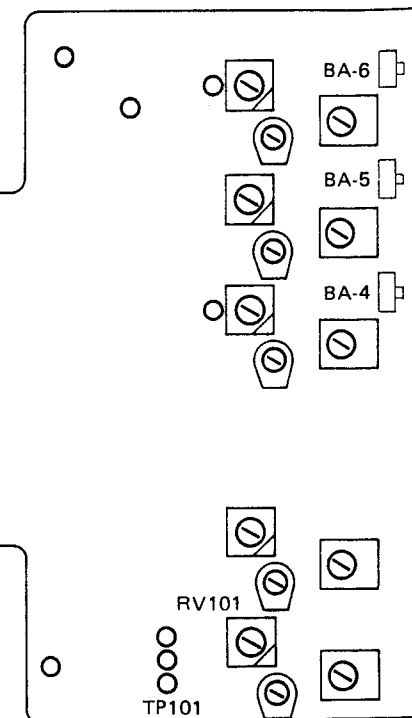
11. S2 (BH Board) 7.5 IRE
 Adjust RV2 of BH board so that the (E) (7.5 IRE level) coincides with (A) (Black level) as shown in Fig. 3-4.
12. Set S2 (BH Board) to 0 IRE.



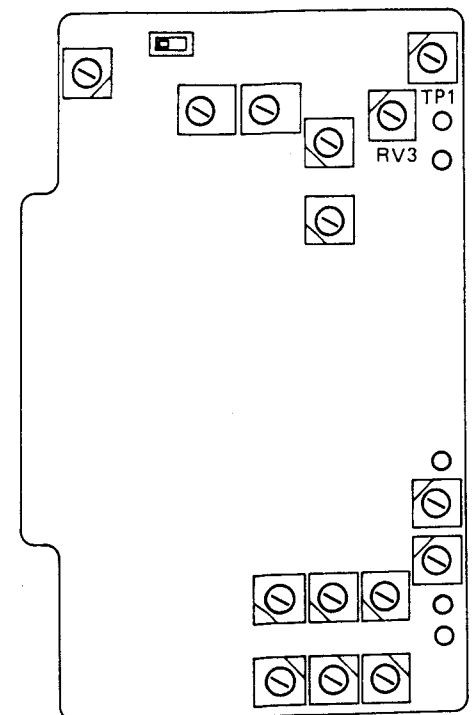
FRONT PANEL (R)



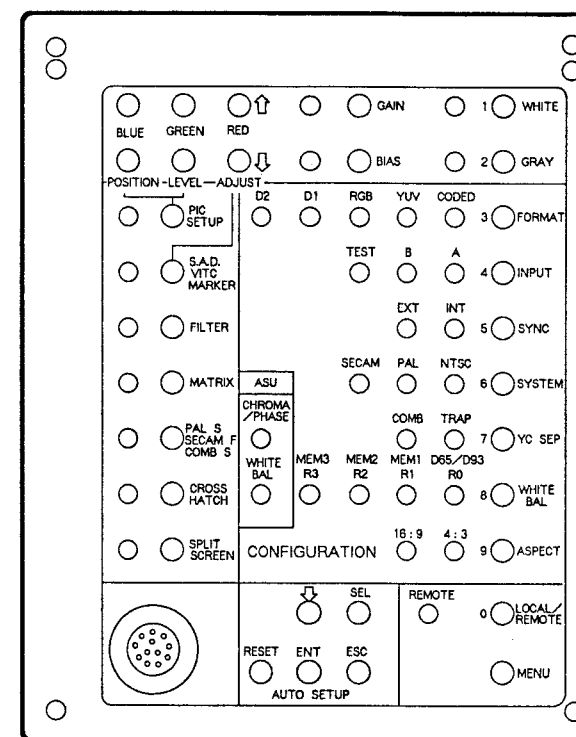
BA board



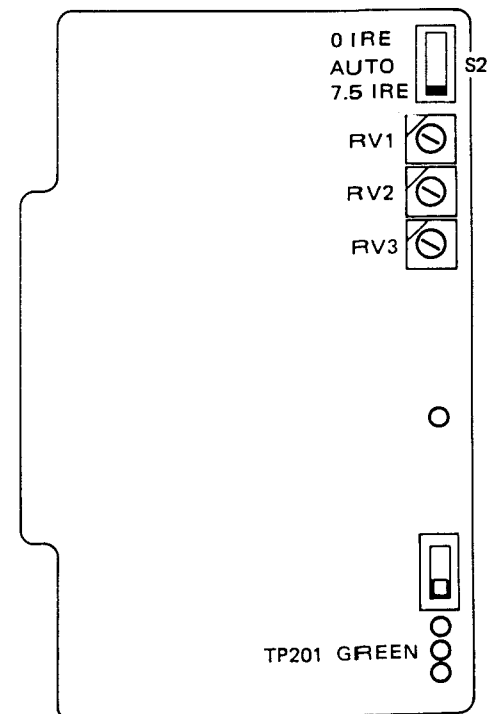
BG board



SUB CONTROL PANEL (HY board)

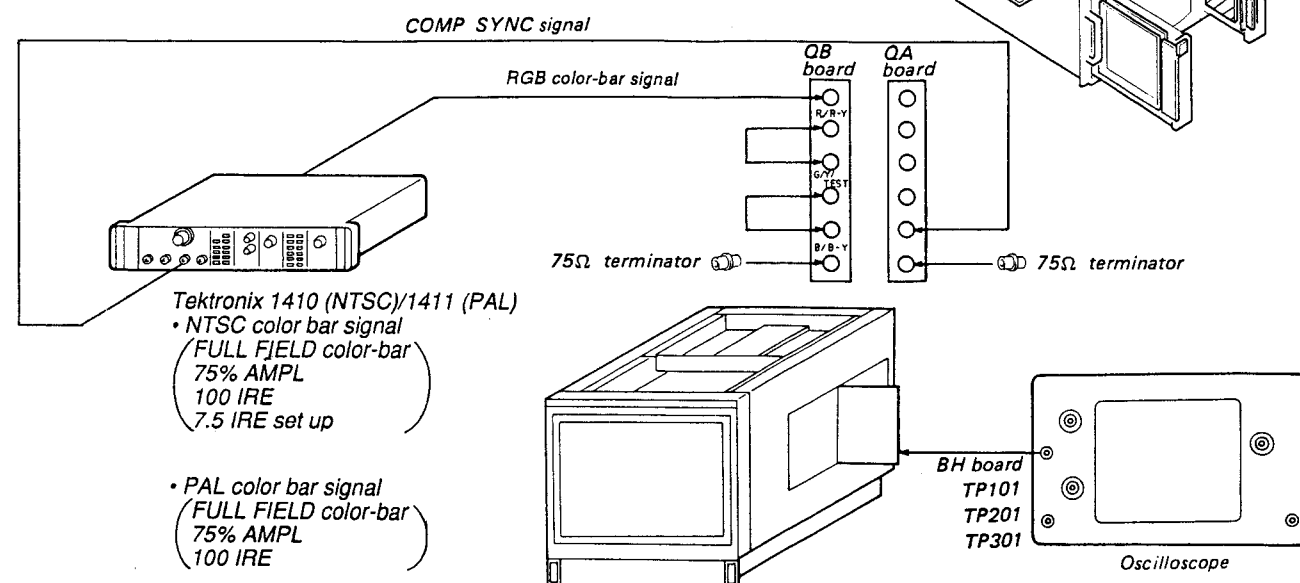
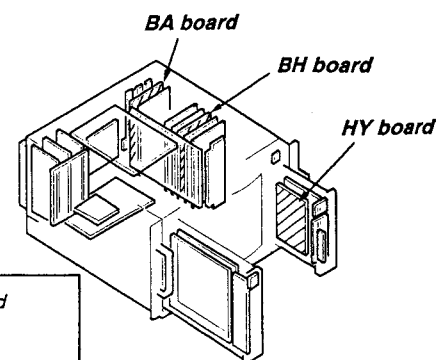


BH board

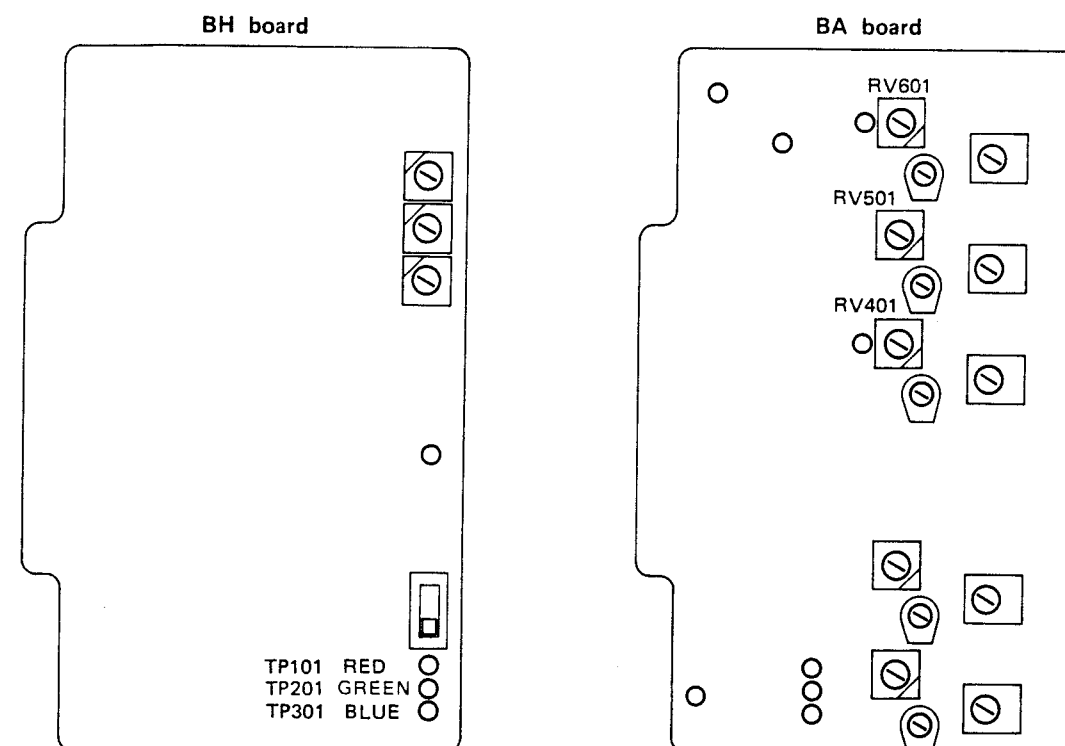
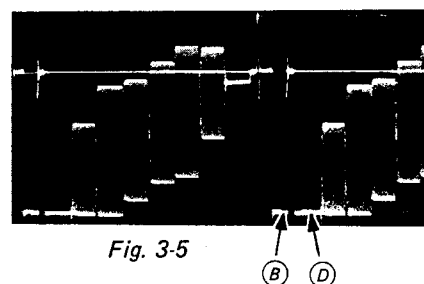


BA board

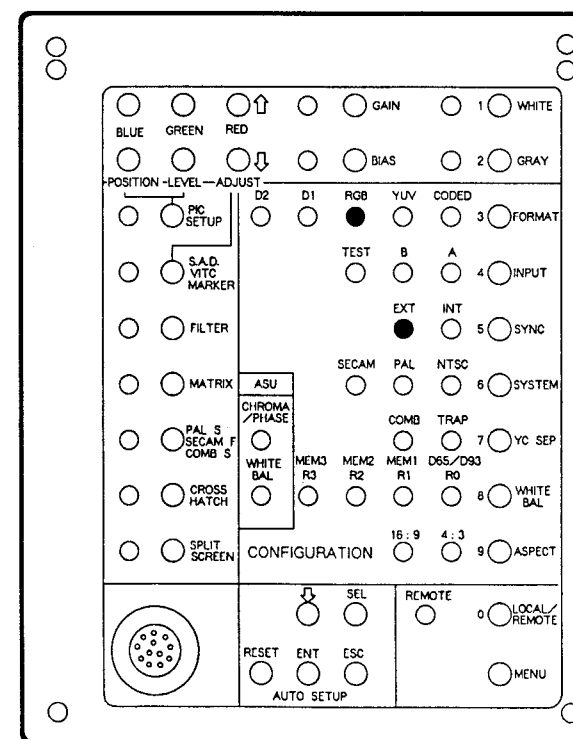
13. Input a color-bar signal to RGB input terminal of the set.
 - SYNC button (SUB CONTROL PANEL).....EXT
 - FORMAT button (SUB CONTROL PANEL).....RGB



14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.



SUB CONTROL PANEL (HY board)



4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

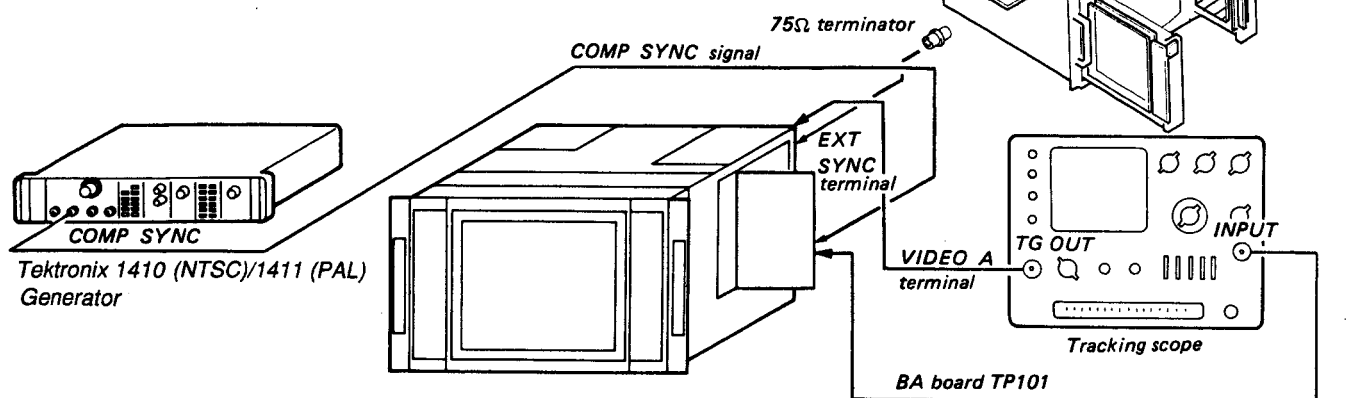


Fig. 4-1

- Complete the connection as shown in Fig 4-1.
 - FORMAT selector CODED
 - INPUT selector (SUB CONTROL PANEL) A
 - SYNC button (SUB CONTROL PANEL) EXT
 - CONTRAST control (FRONT PANEL (R)) Minimum
 - BRIGHTNESS control (FRONT PANEL (R)) Minimum
- Adjust CV101 so that minimum as shown in Fig. 4-2.

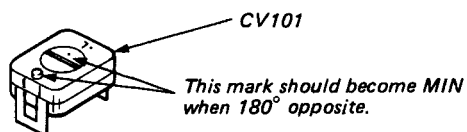


Fig. 4-2

- Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.

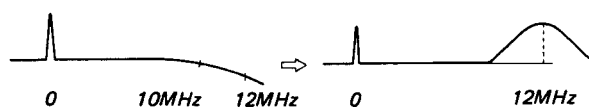


Fig. 4-3

- Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

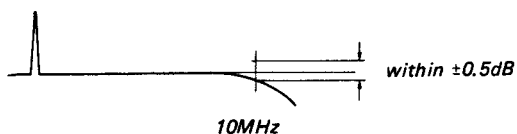
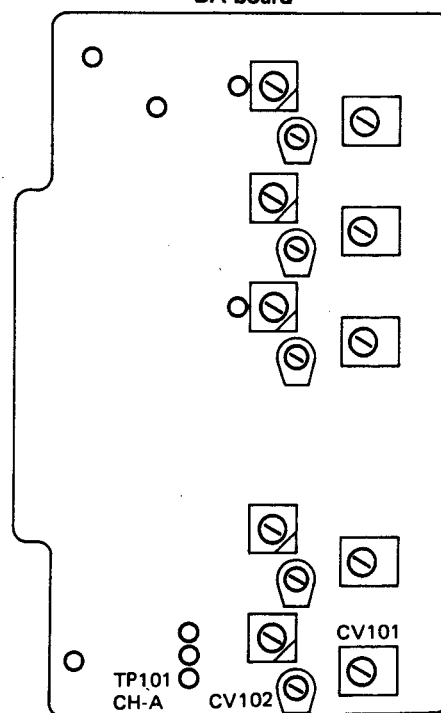
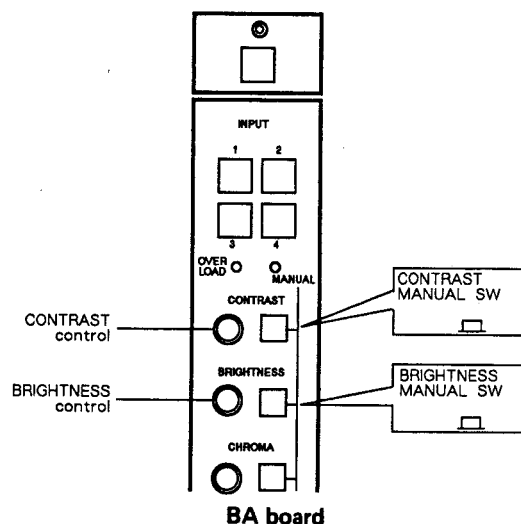


Fig. 4-4

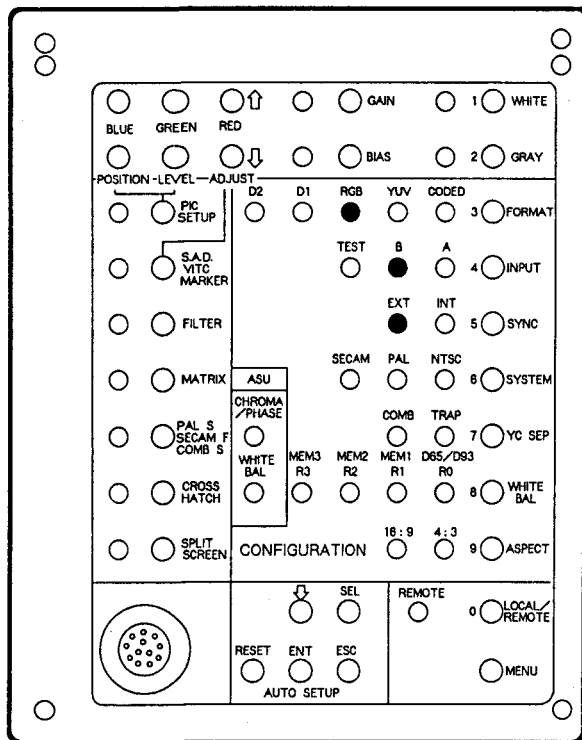
FRONT PANEL (R)



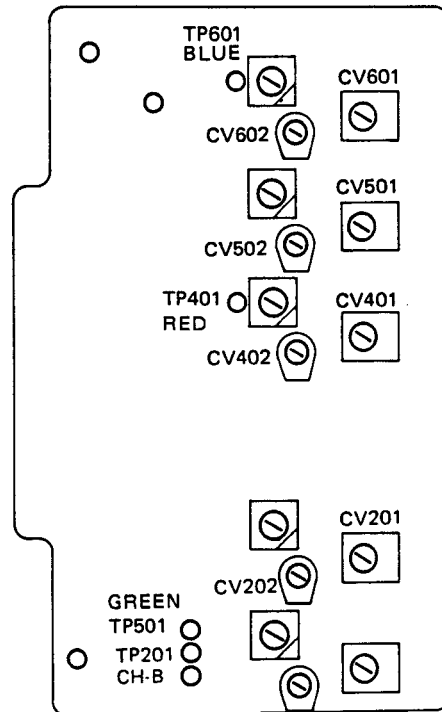
5. In the same way, perform the adjustment for 2 CH, under the following conditions.

INPUT	INPUT button	FORMAT button	TP (BA board)	CV (BA board)
	(SUB CONTROL PANEL)			
B	B	CODED	TP201	CV201, 202
R/R-Y		RGB	TP401	CV401, 402
G/Y/TEST		RGB	TP501	CV501, 502
B/B-Y		RGB	TP601	CV601, 602

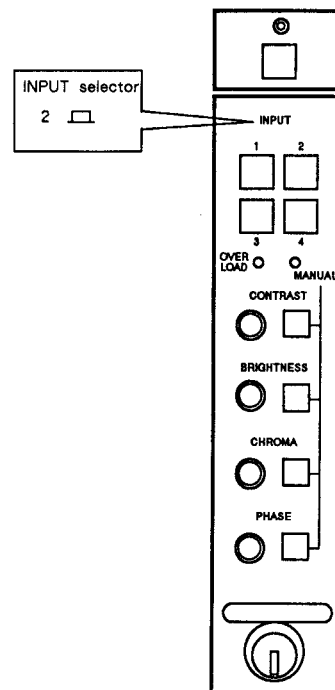
SUB CONTROL PANEL (HY board)



BA board



FRONT PANEL (R)



5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

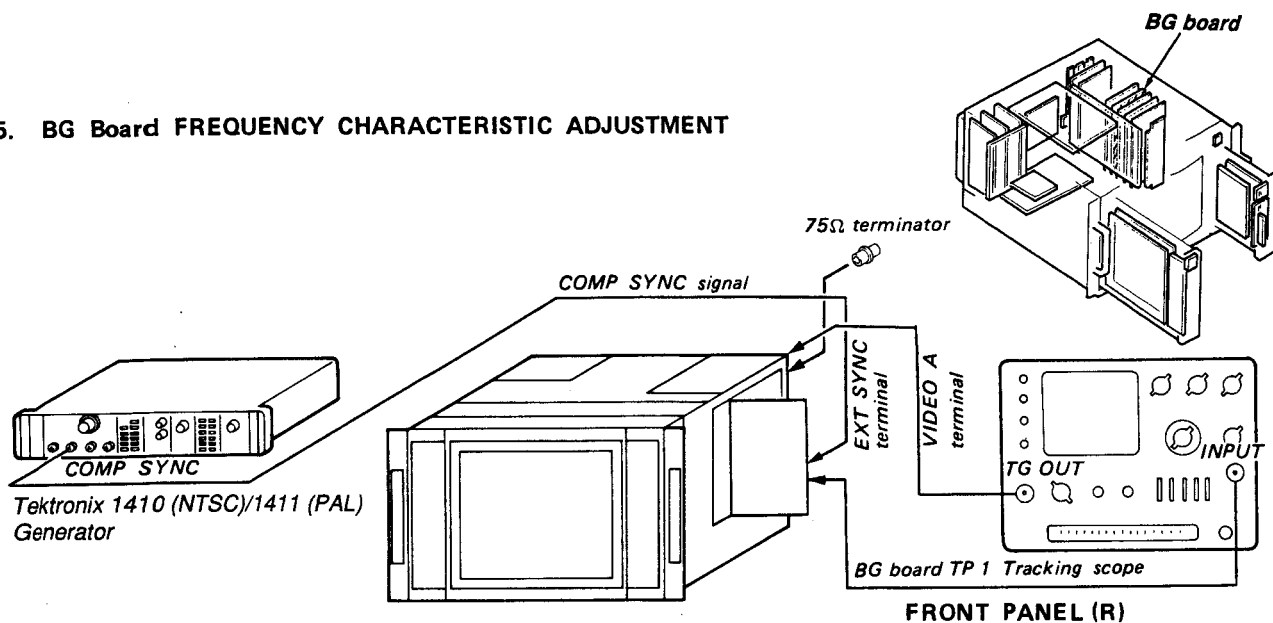


Fig. 5-1

- Complete the connection as shown in Fig 5-1.
 - SYNC button (SUB CONTROL PANEL)..... EXT
 - CONTRAST control Minimum
 - BRIGHTNESS control Minimum
 - S1 (BG Board) 4.5MHz (4.5 6.5)
- Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within $0 \pm 0.5\text{dB}$)

*Waveform movement by RV1, CV2, CV3

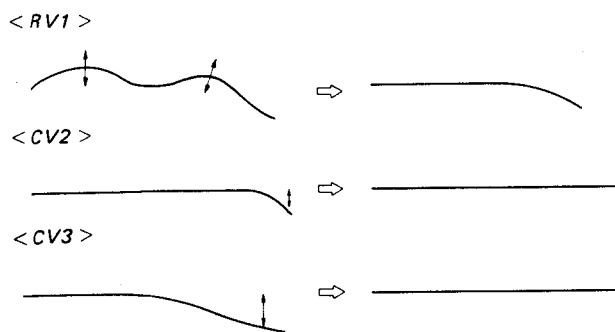


Fig. 5-2

- Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.

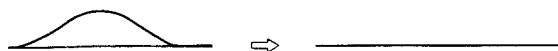
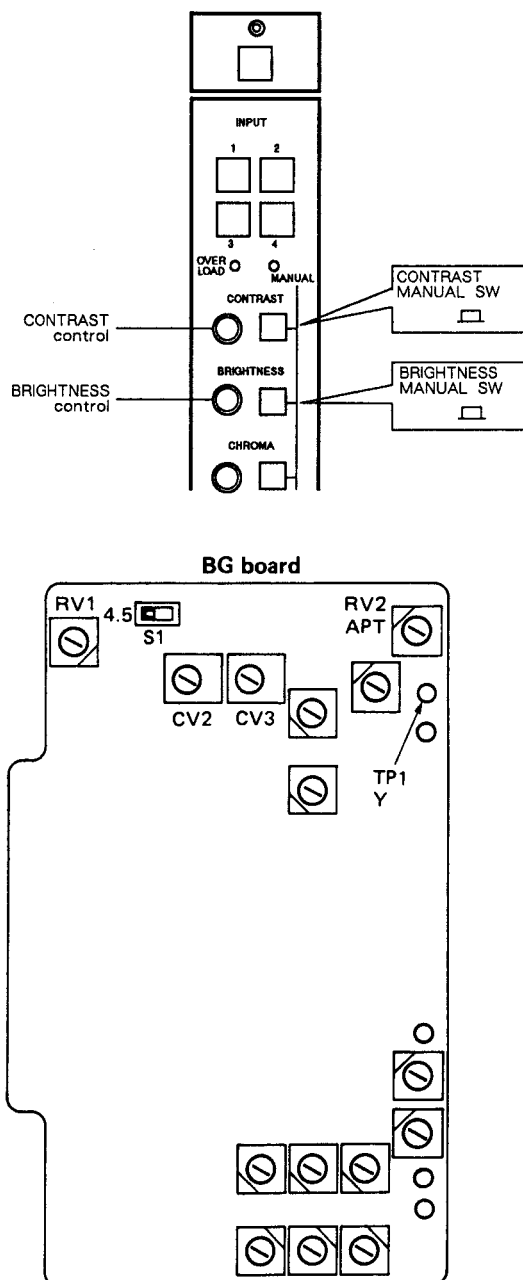


Fig. 5-3



6. COMPONENT INPUT LEVEL ADJUSTMENT

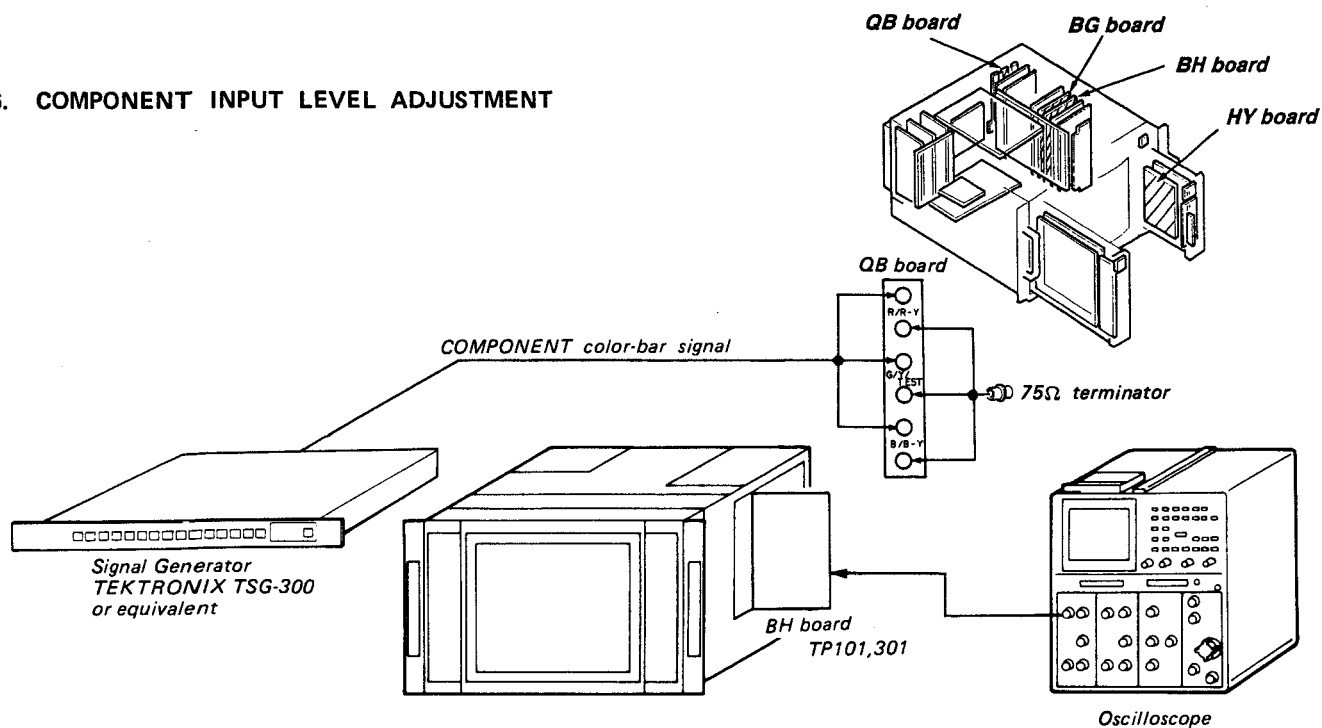


Fig. 6-1

1. Complete the connections as shown in Fig. 6-1.
 - **FORMAT** button (SUB CONTROL PANEL)..... YUV
2. Connect an oscilloscope to the TP-101 of BH board.
3. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)

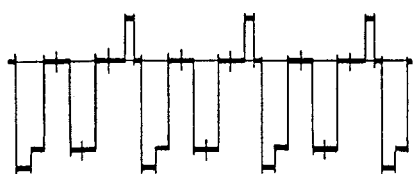


Fig. 6-2

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

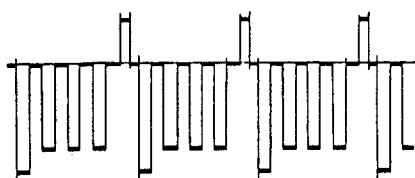
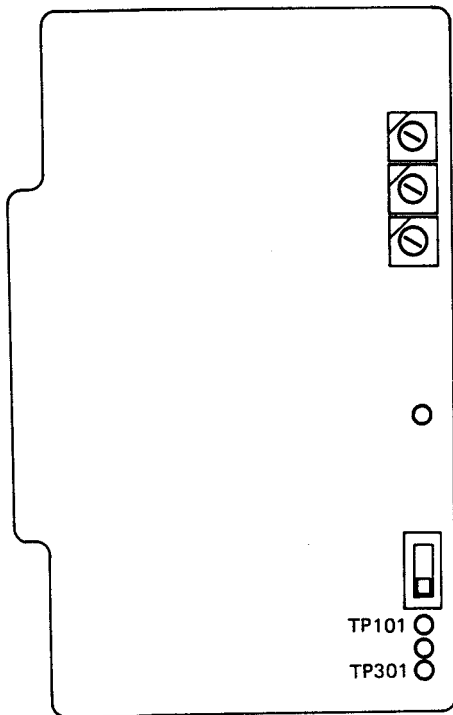
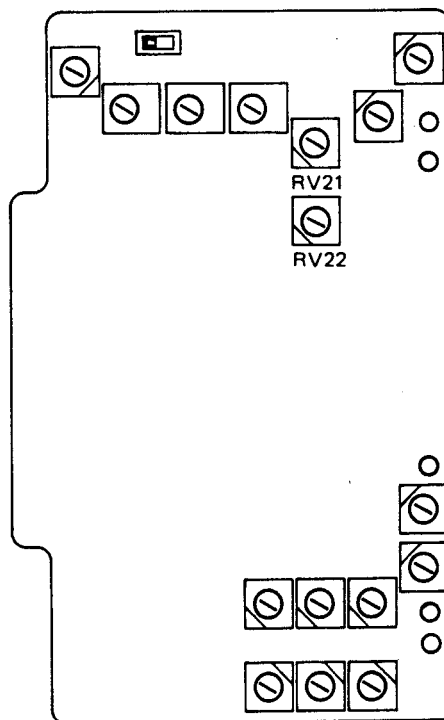


Fig. 6-3

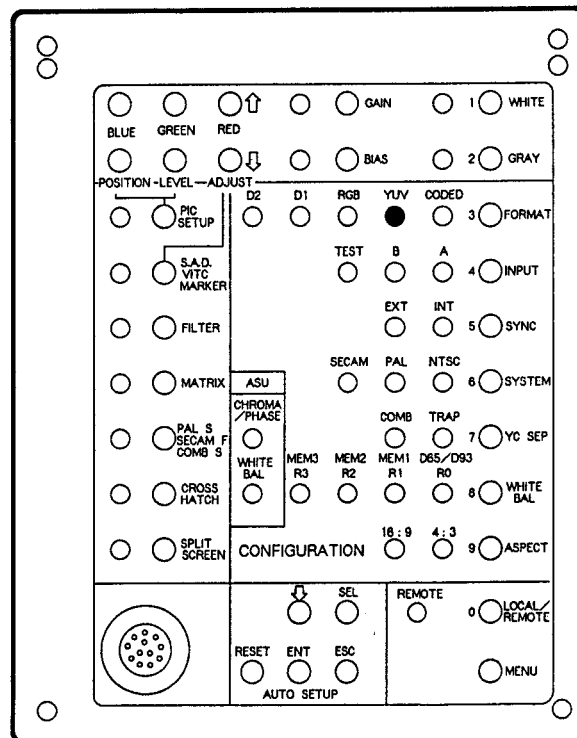
BH board



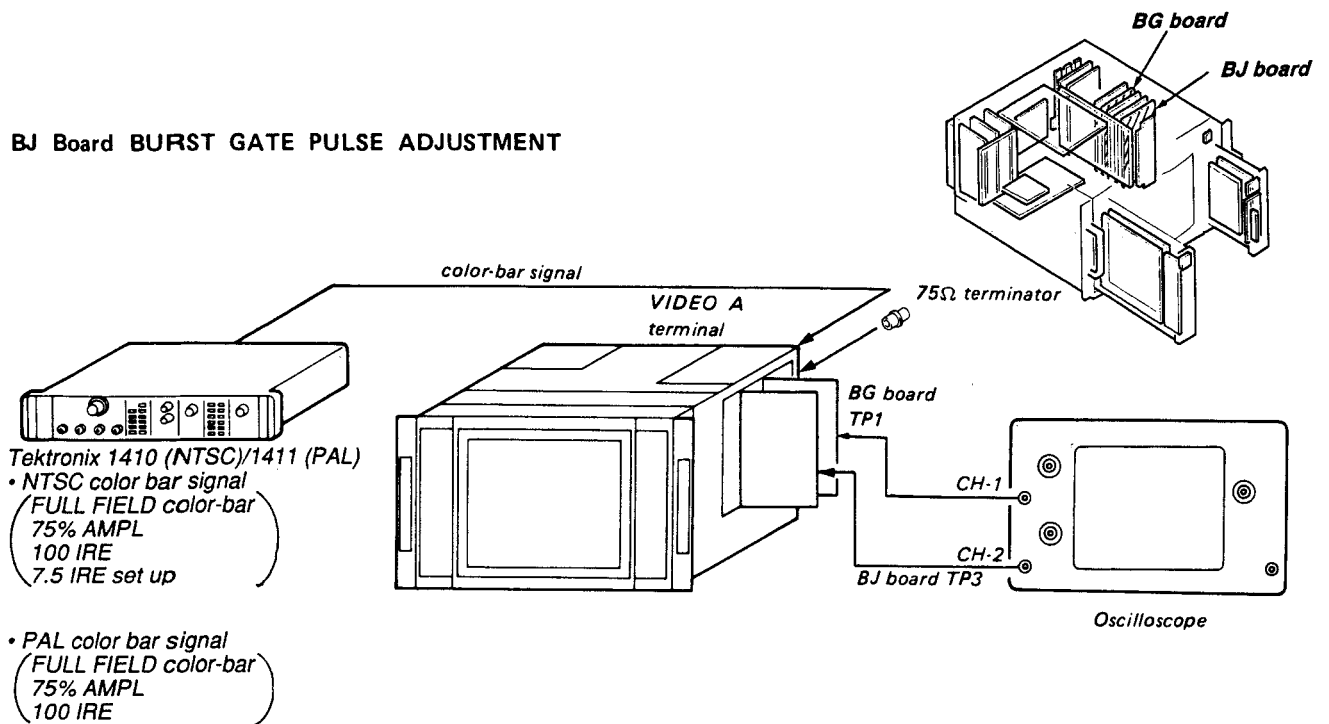
BG board



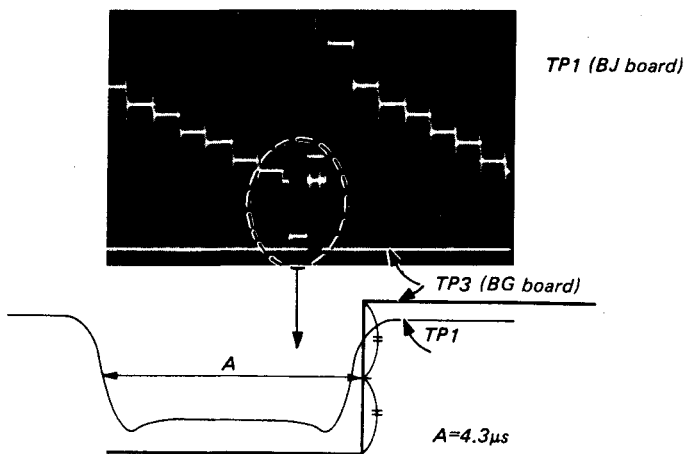
SUB CONTROL PANEL (HY board)



7. BJ Board BURST GATE PULSE ADJUSTMENT



1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the A is $4.3\mu\text{s}$ as shown in Fig. 7-1.



* Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to $4.3\mu\text{s}$.

Fig. 7-1

4. Adjust RV4 of BJ board so that the burst gate pulse width is $3.9\mu\text{s}$ as shown in Fig. 7-2.

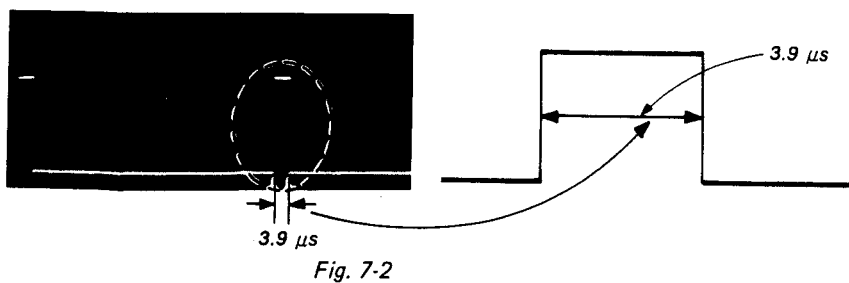
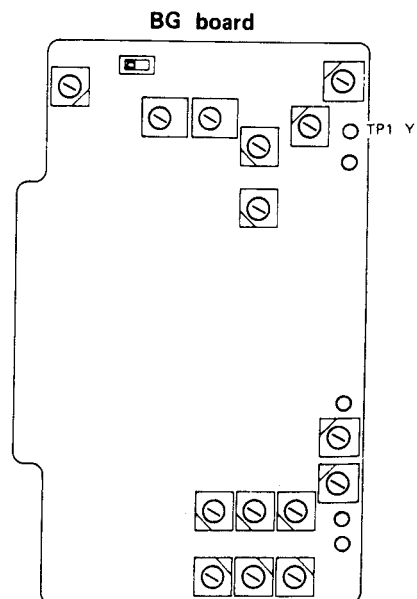
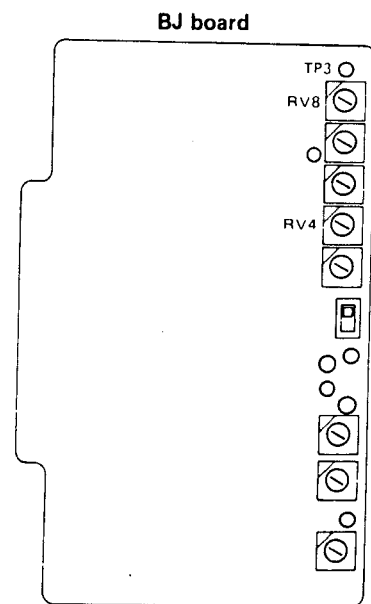
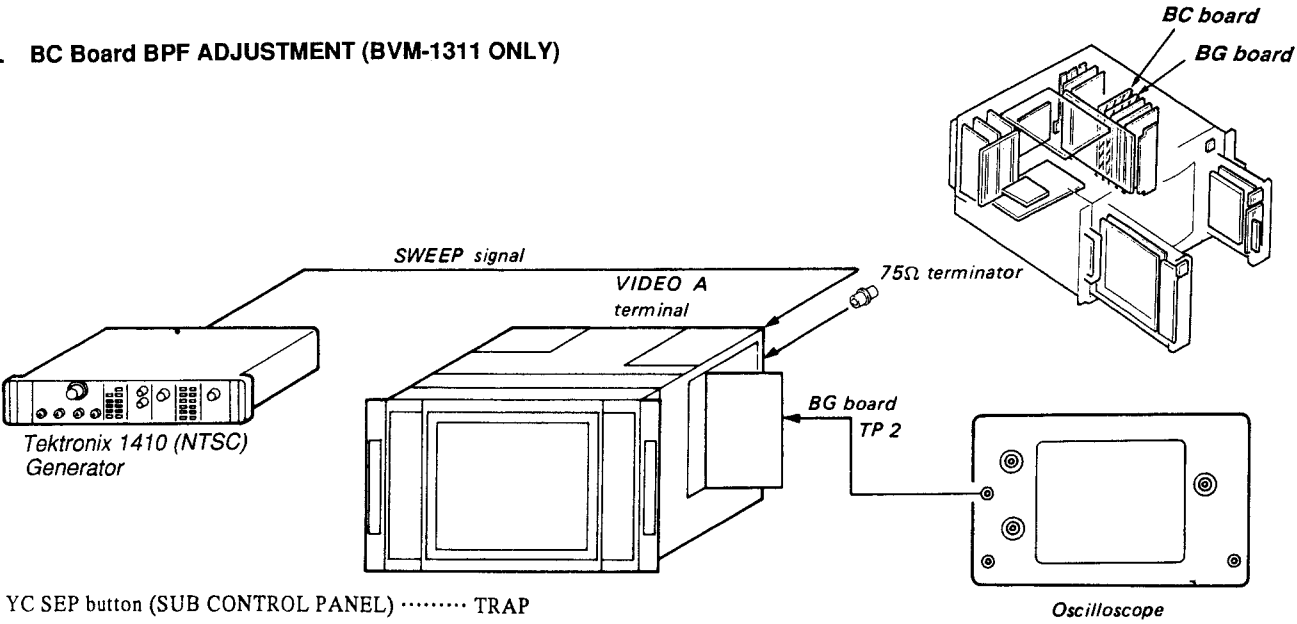


Fig. 7-2



8. BC Board BPF ADJUSTMENT (BVM-1311 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP
1. Input SWEEP signal to the VIDEO A terminal of the set.
 2. Connect an oscilloscope to the TP2 on the BG board.
 3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

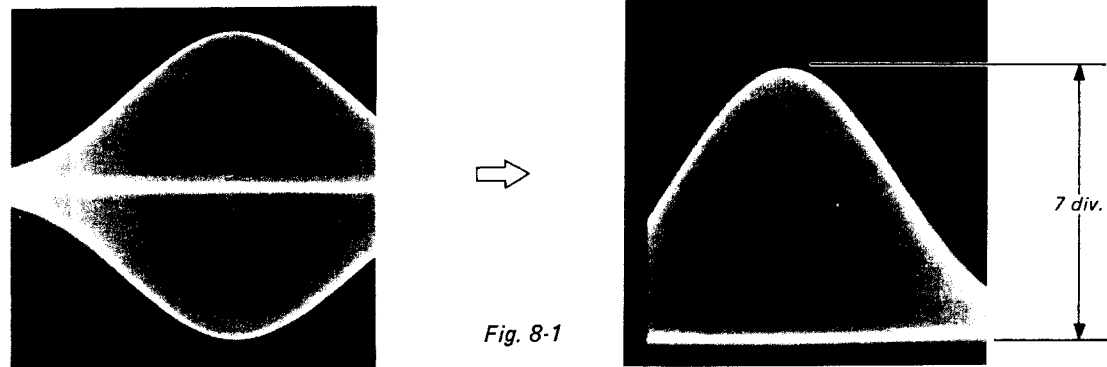


Fig. 8-1

4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.

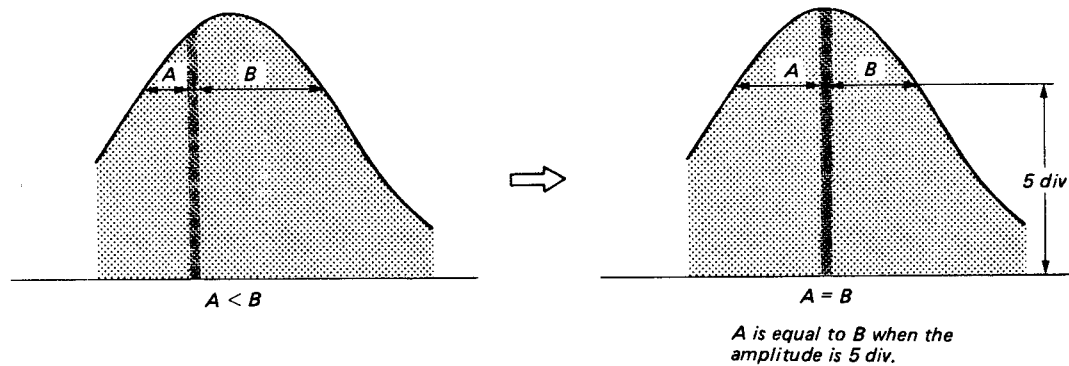
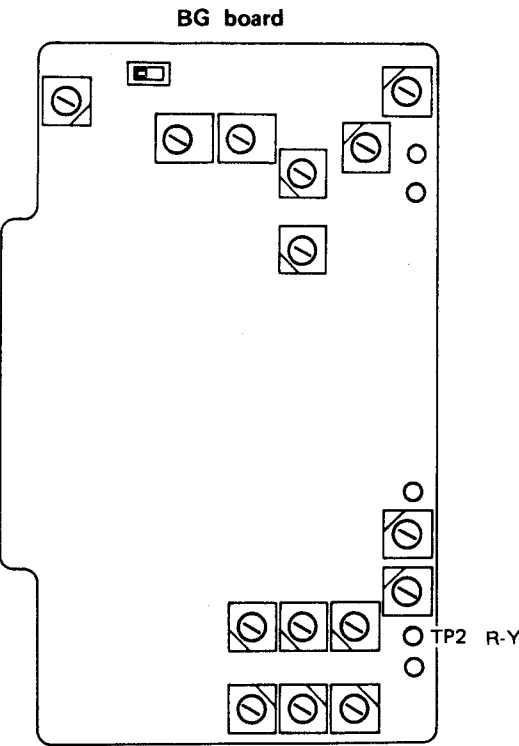
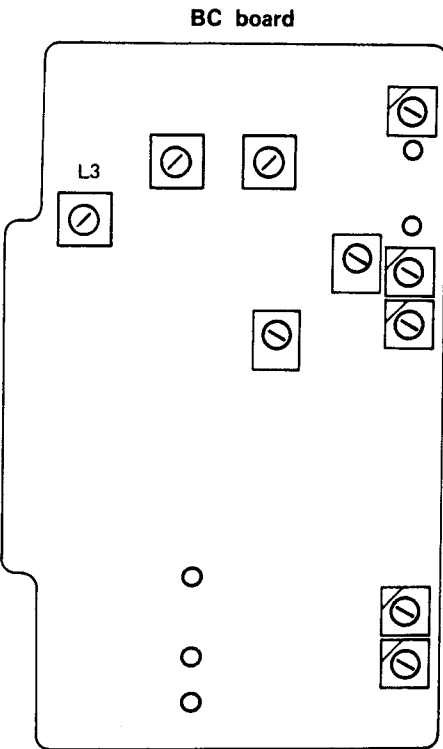
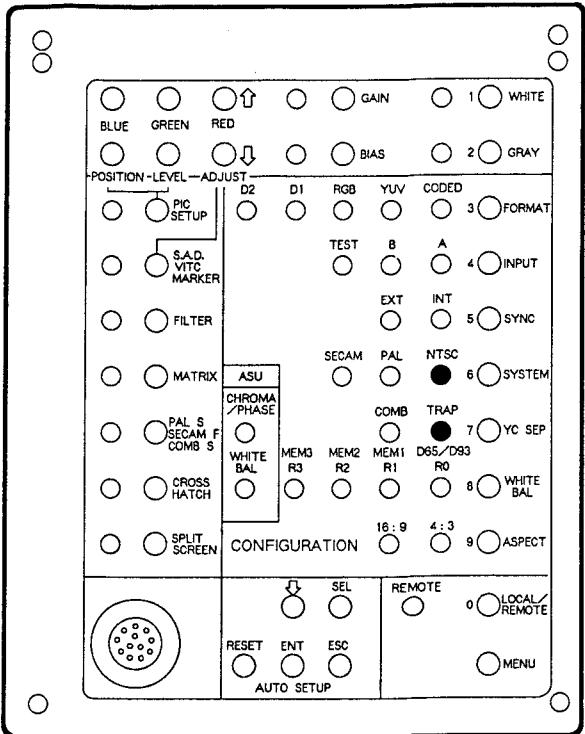


Fig. 8-2



SUB CONTROL PANEL (HY board)



9. BC Board PHASE SHIFT ADJUSTMENT
(BVM-1311 ONLY)

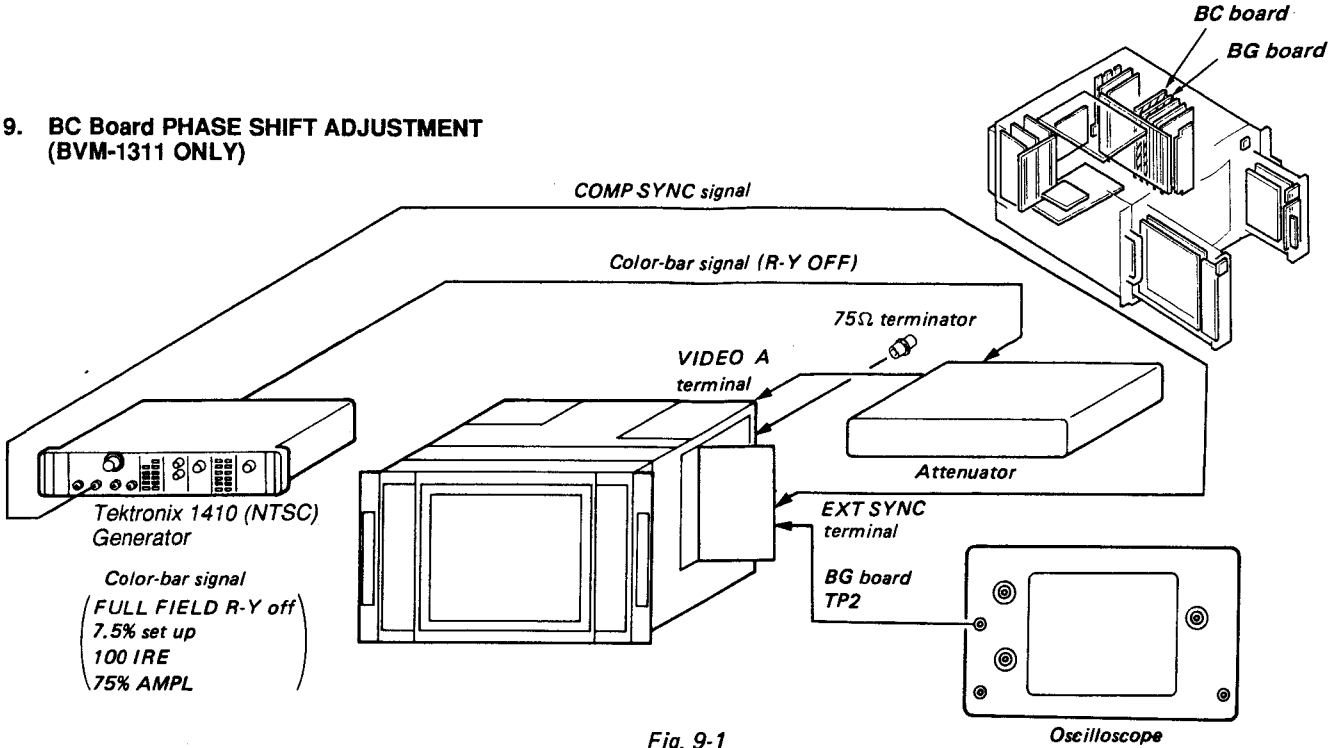


Fig. 9-1

1. Complete the connection as shown in Fig 9-1.
 - COLOR SYSTEM (SUB CONTROL PANEL)..... NTSC
 - FORMAT button (SUB CONTROL PANEL)..... CODED
 - YC SEP button (SUB CONTROL PANEL) TRAP
 - SYNC button (SUB CONTROL PANEL)..... EXT
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel as shown in Fig. 9-2.

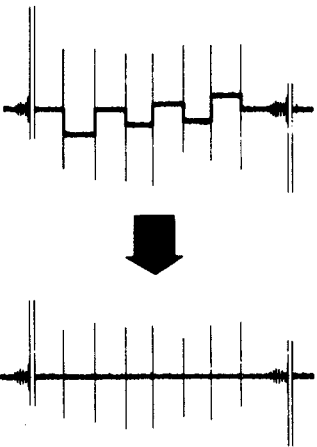
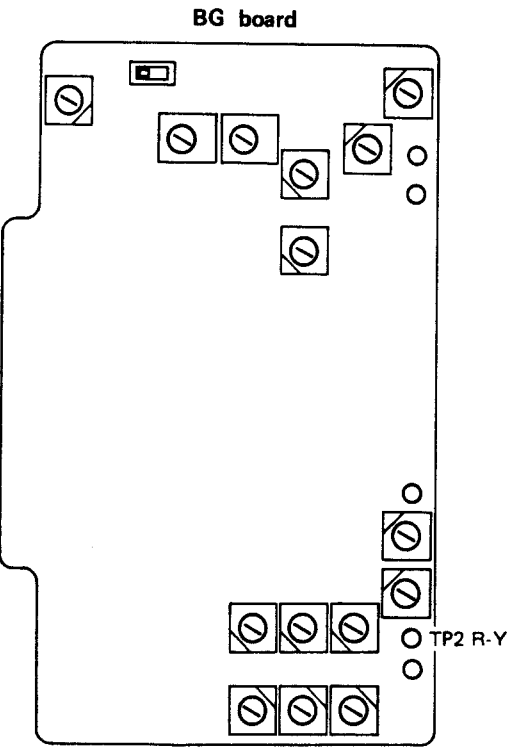
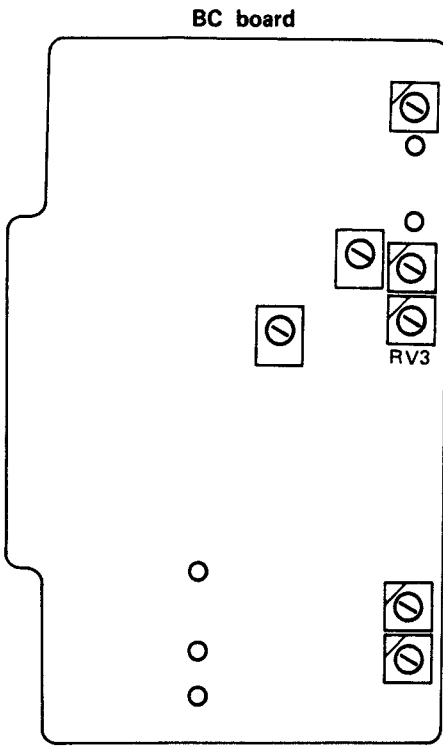
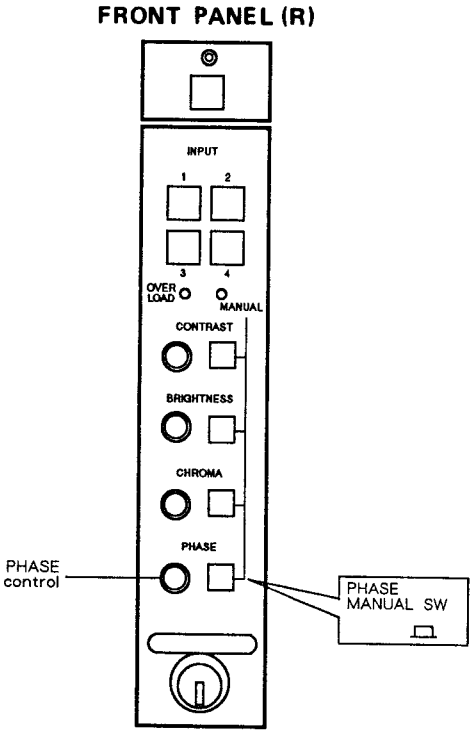
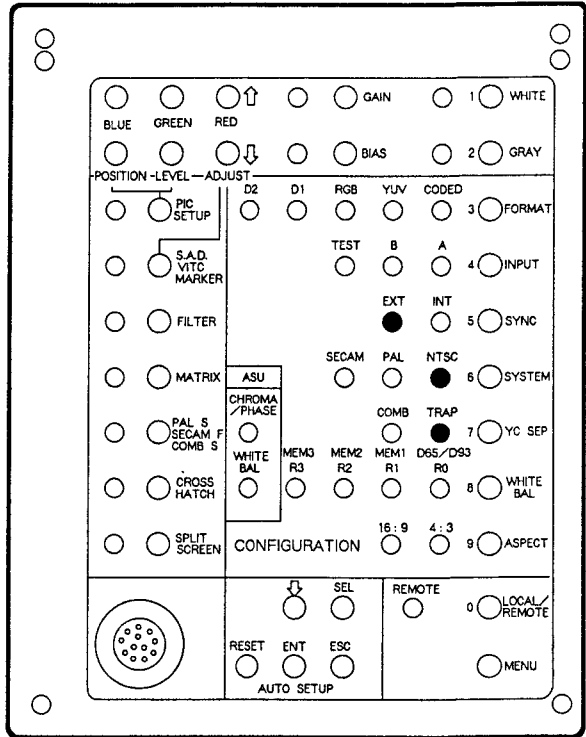


Fig. 9-2

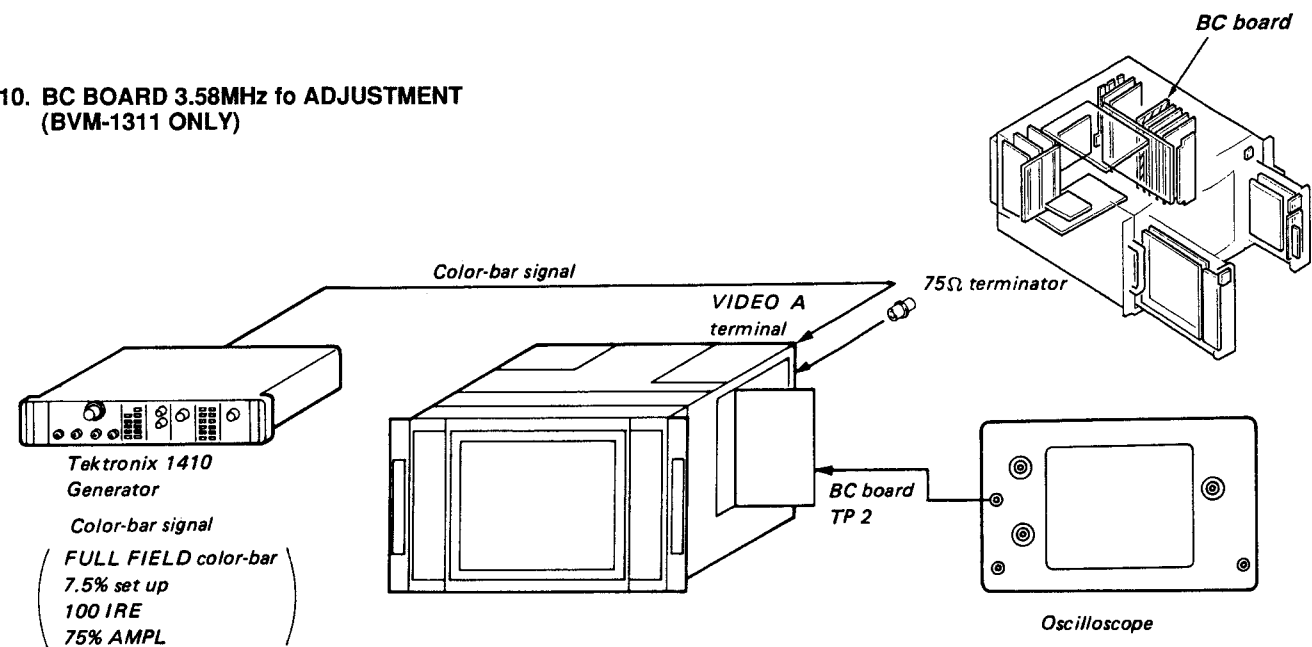
4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.



SUB CONTROL PANEL (HY board)



10. BC BOARD 3.58MHz fo ADJUSTMENT
(BVM-1311 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP
1. Input color-bar signal to the VIDEO A terminal of the set.
 2. Connect an oscilloscope to the TP2 of BC board.
 3. Short-circuit between TP ⑥ and ⑦ of BC board with a jumper wire.
 4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
 5. Turn off the power of this monitor, and disconnect TP ⑥ and ⑦ of BC board.

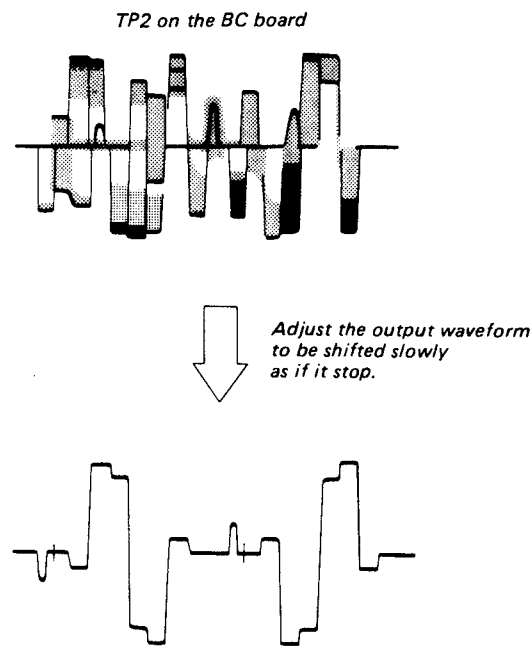
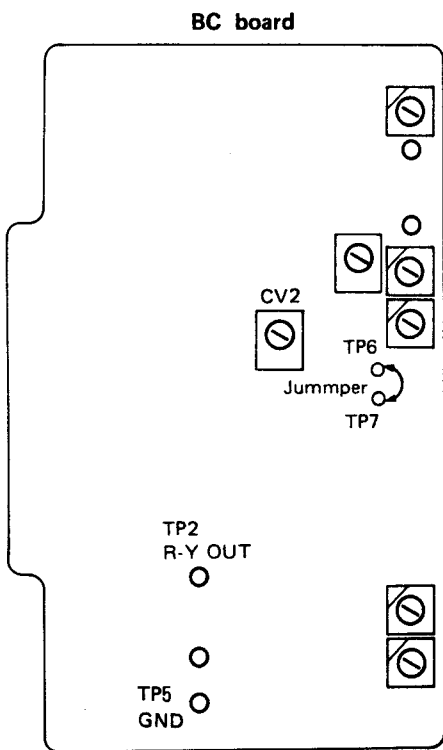
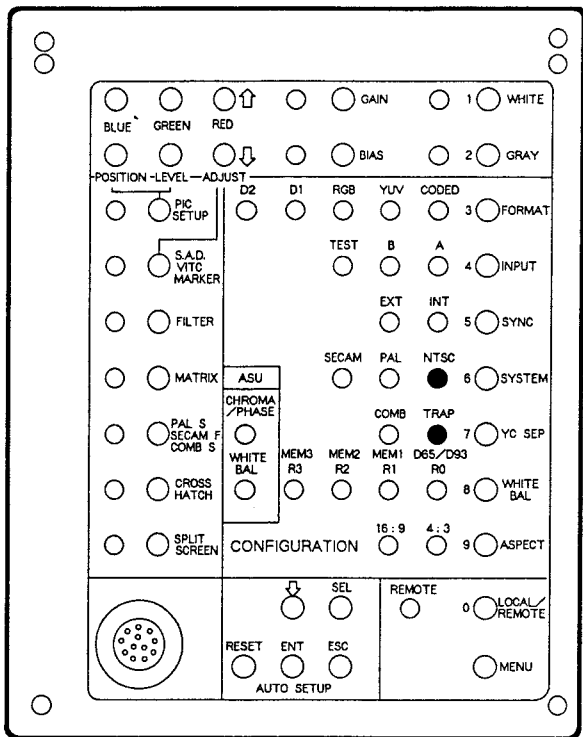


Fig. 10-1



SUB CONTROL PANEL (HY board)



11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1311 ONLY)

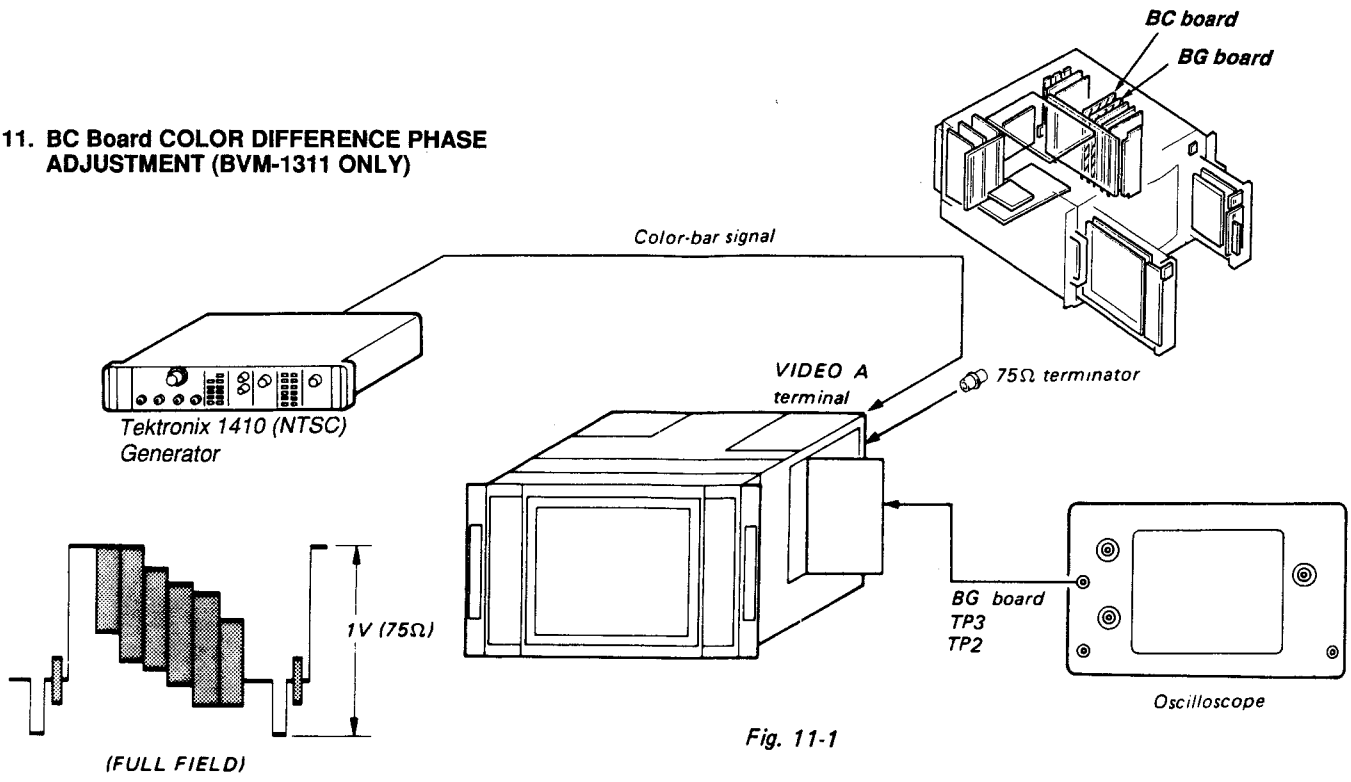


Fig. 11-1

1. Complete the connections as shown in Fig. 11-1.
2. Turn on the power of this monitor.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the output waveform is flat. (See Fig. 11-2.)

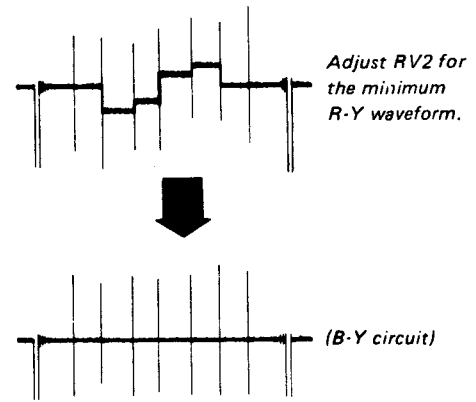


Fig. 11-2

Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.

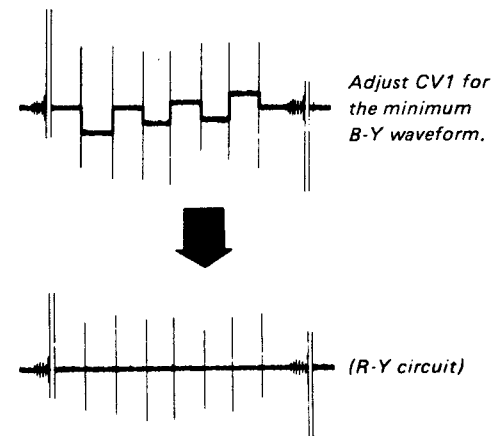
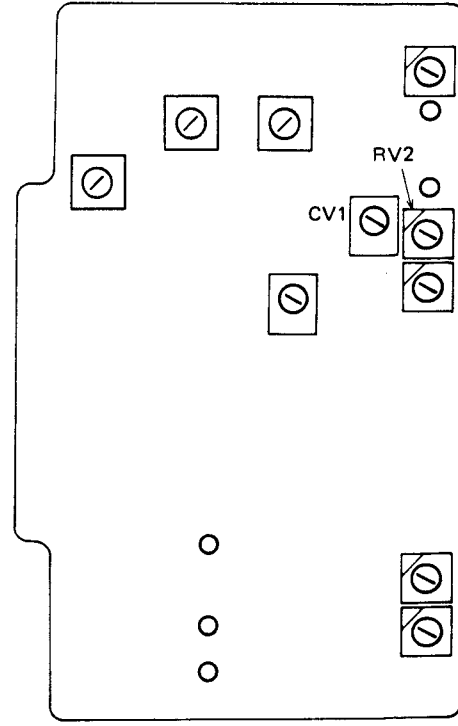
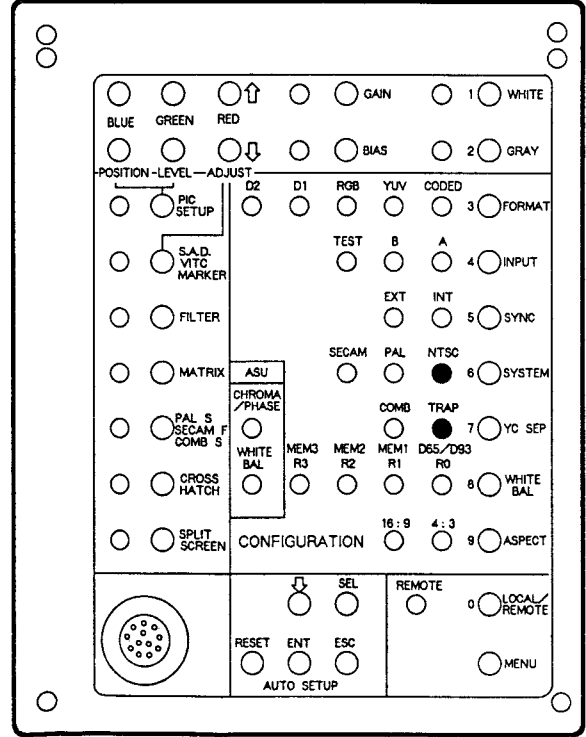


Fig. 11-3

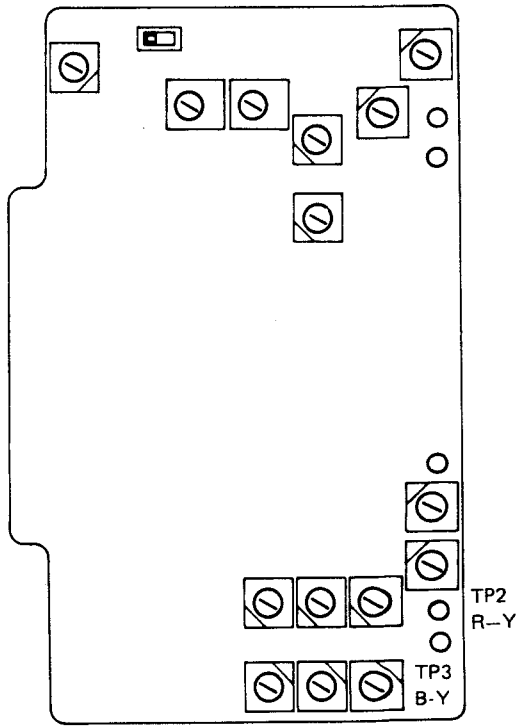
BC Board



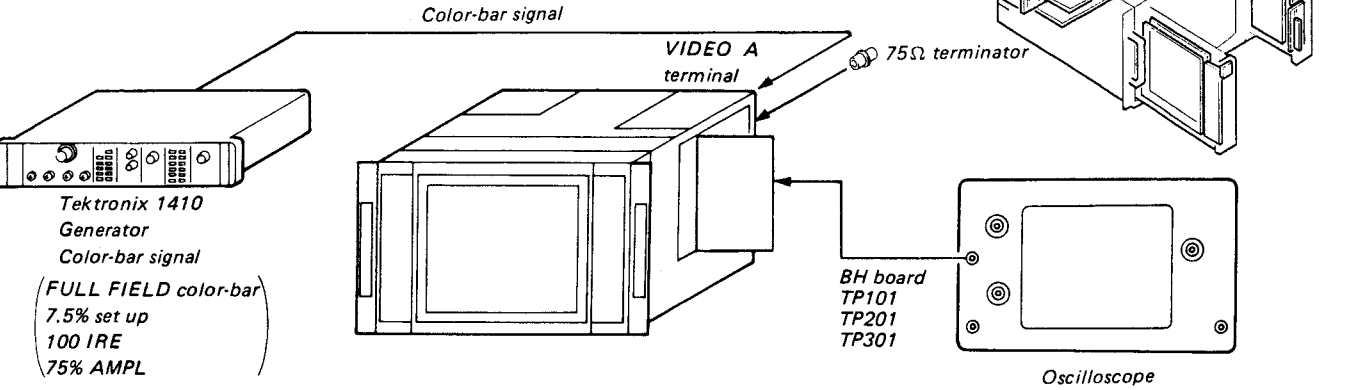
SUB CONTROL PANEL (HY board)



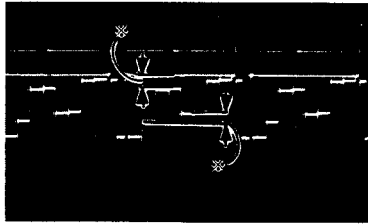
BG Board



12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1311 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP
- 1. Input color-bar signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP101 of BH board.
- 3. Eliminate interval in the output waveform (mark * in Fig. 12-1) with RV4.



TP101 R OUT

Fig. 12-1

* Bring * marked levels to zero respectively with RV4 on the BC board.

- 4. Connect an oscilloscope to the TP301 of BH board.
- 5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.

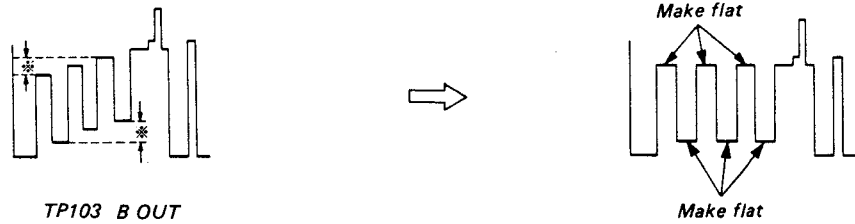
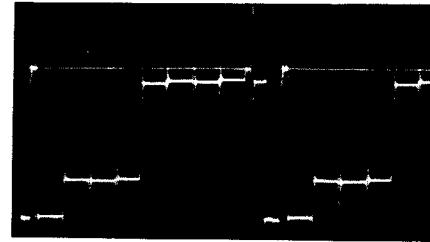


Fig. 12-2

- 6. Connect an oscilloscope to the TP201 of BH board.
- 7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

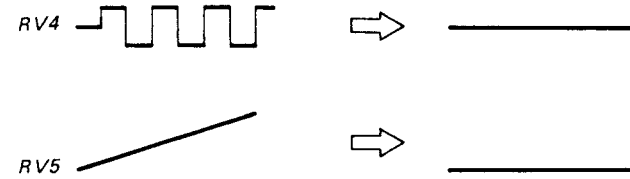
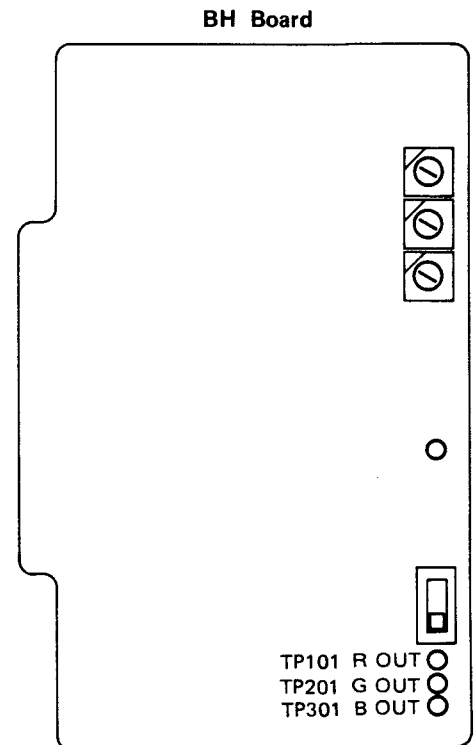
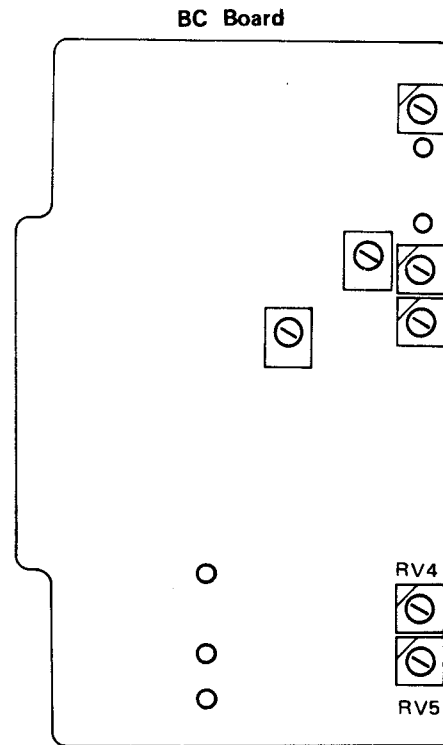
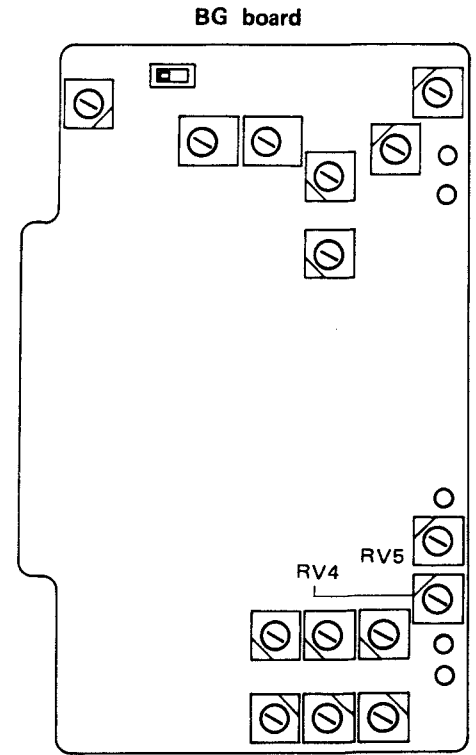
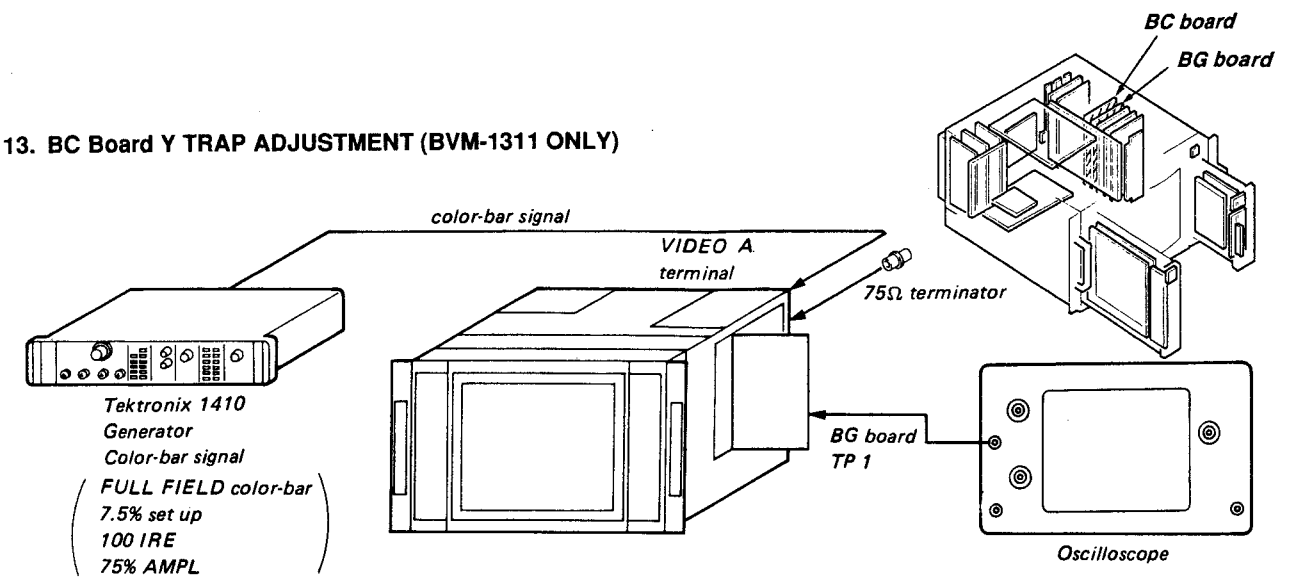


Fig. 12-3

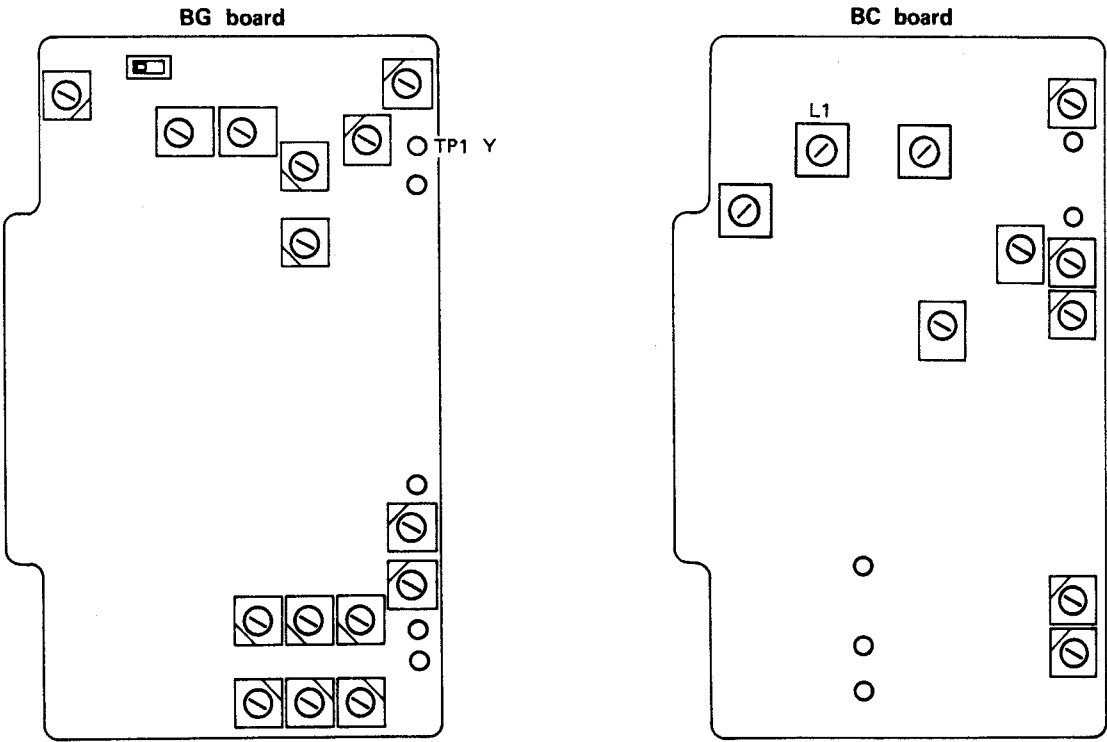
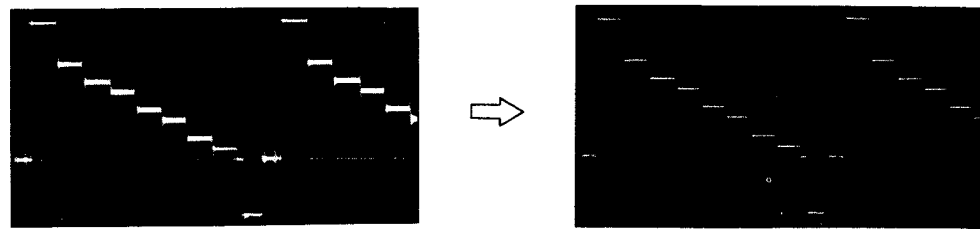


13. BC Board Y TRAP ADJUSTMENT (BVM-1311 ONLY)

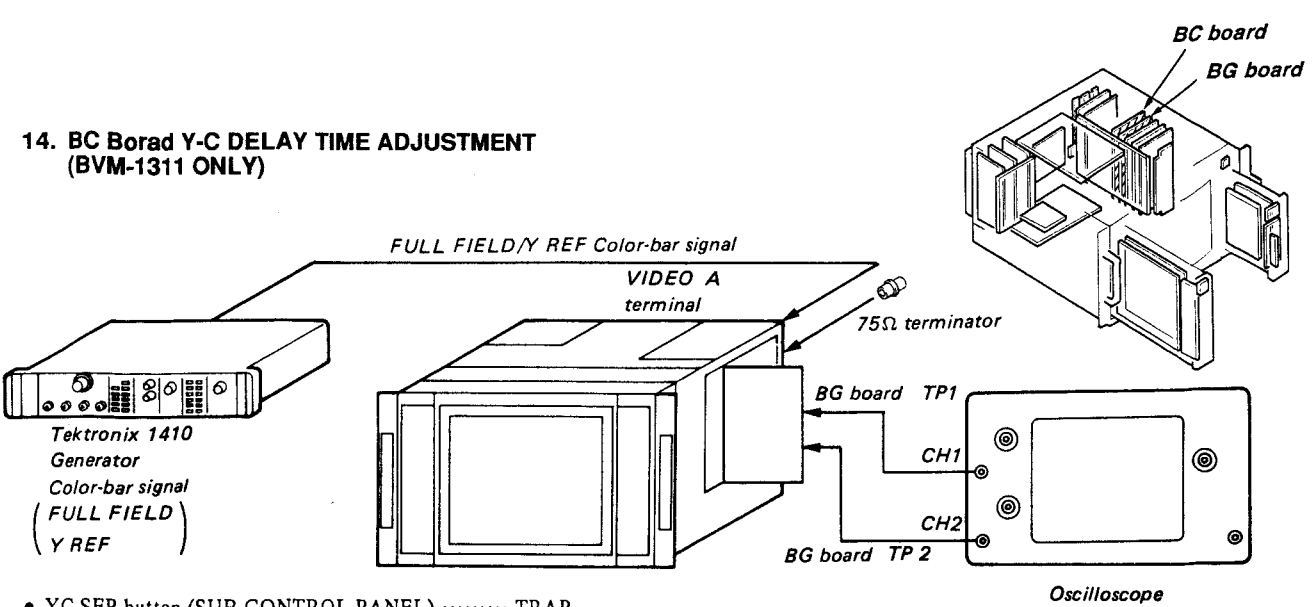


- YC SEP button (SUB CONTROL PANEL) TRAP
- 1. Input color-bar signal to VIDEO A terminal of the set.

2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.



14. BC Board Y-C DELAY TIME ADJUSTMENT (BVM-1311 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.

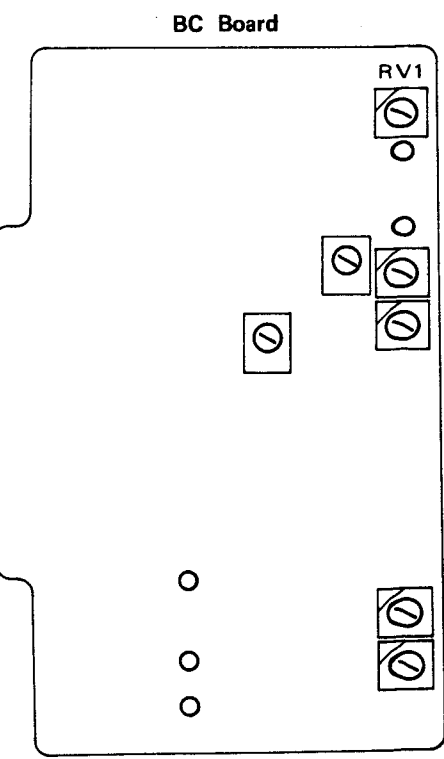
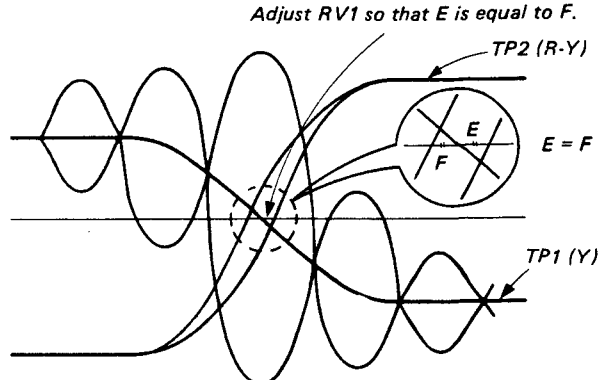
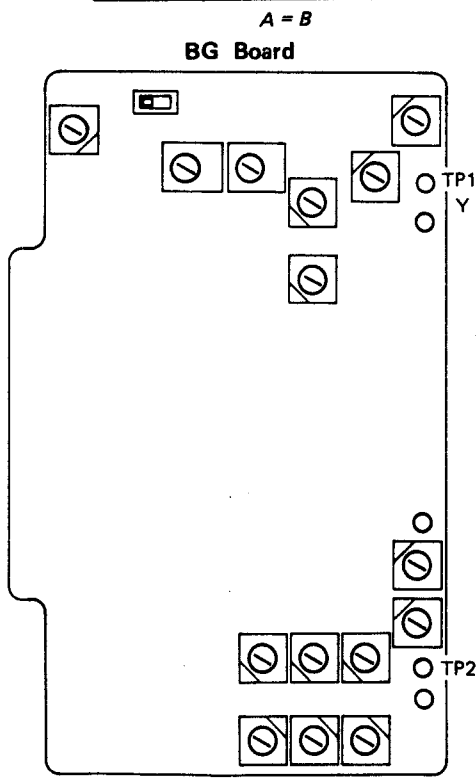
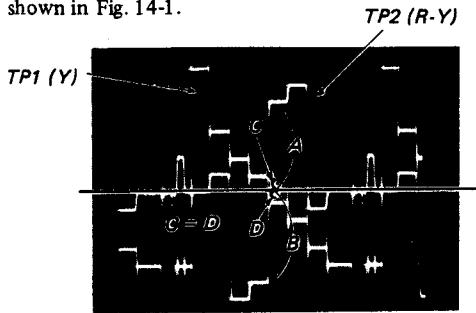
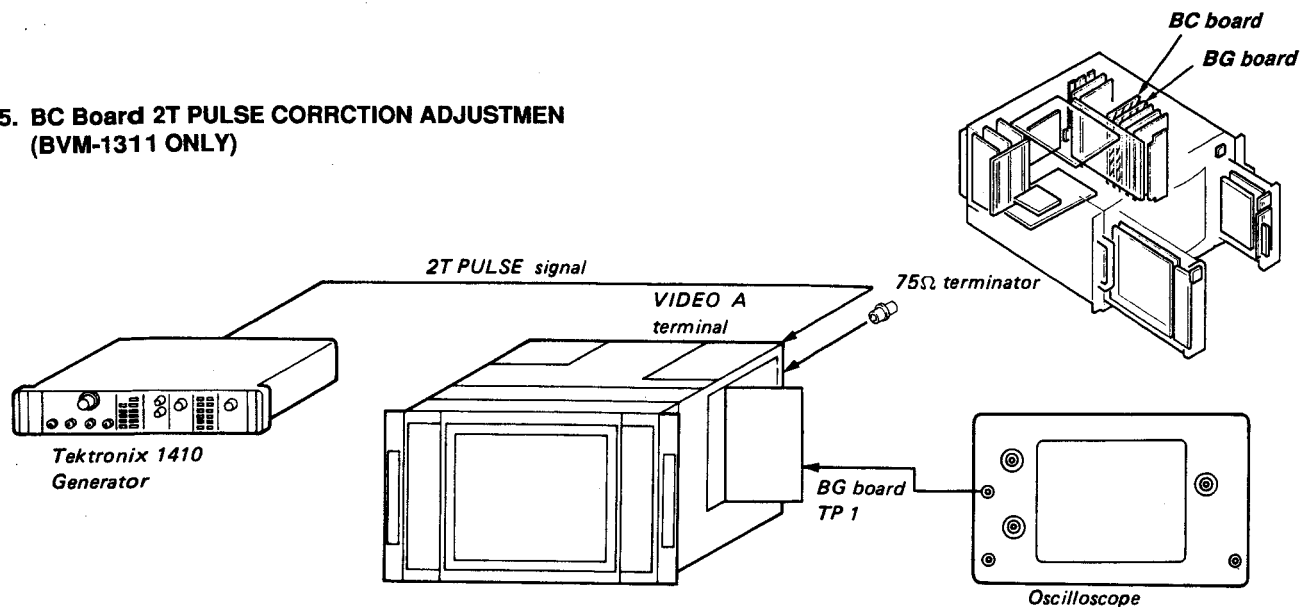


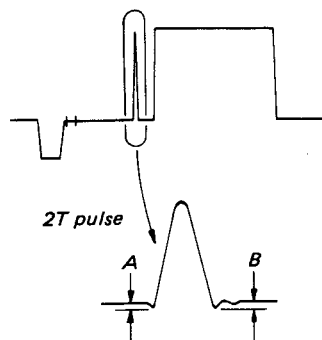
Fig. 14-1

15. BC Board 2T PULSE CORRECTION ADJUSTMEN (BVM-1311 ONLY)

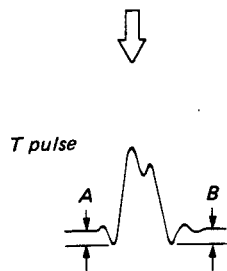
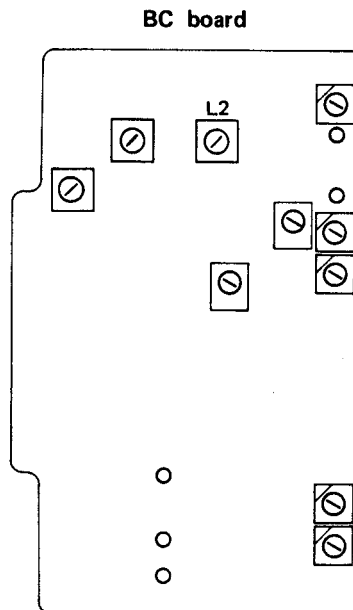


• YC SEP button (SUB CONTROL PANEL) TRAP

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.



* Adjust L2 to obtain the condition $A = B$.



* The waveform balance should not be lost extremely.

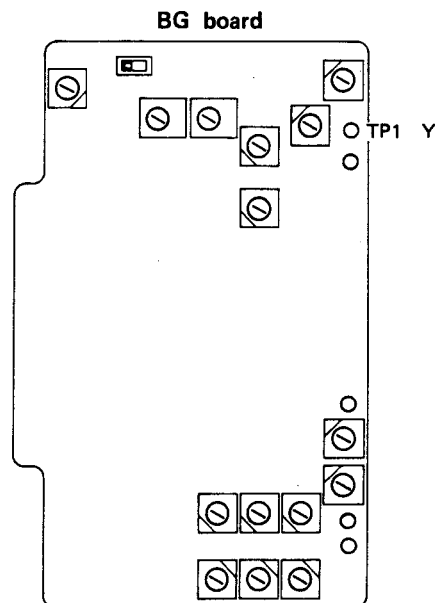
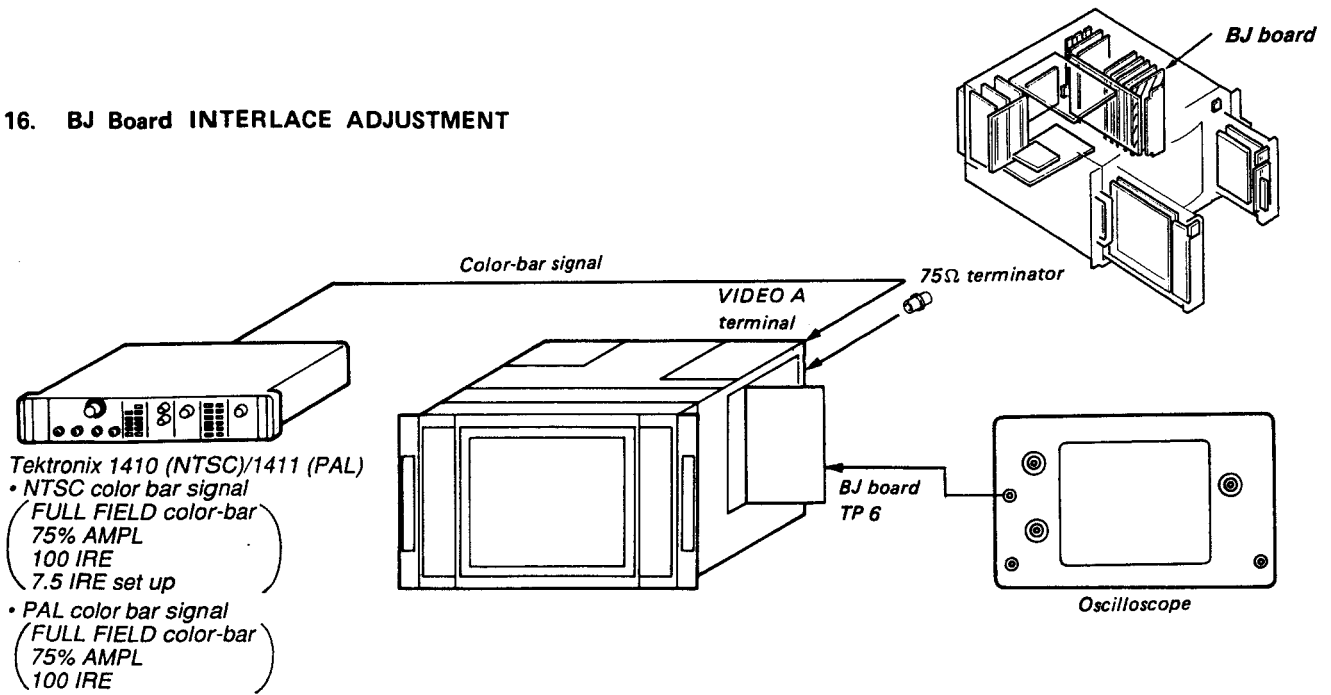


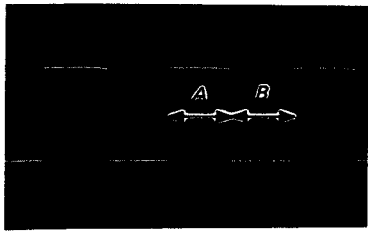
Fig. 15-1

16. BJ Board INTERLACE ADJUSTMENT



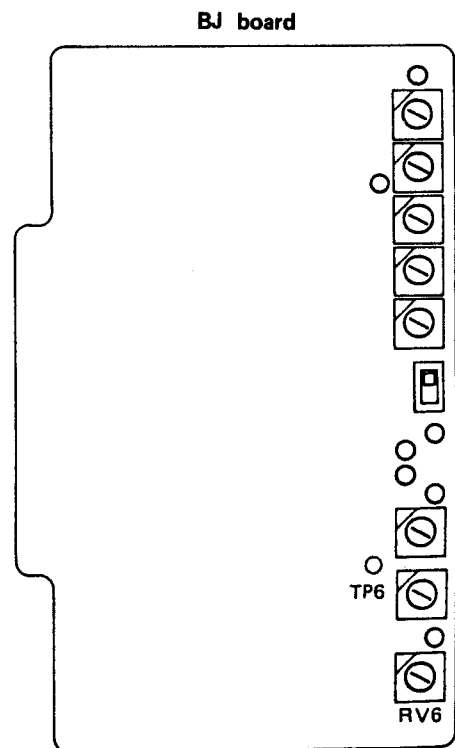
• YC SEP button (SUB CONTROL PANEL) TRAP

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

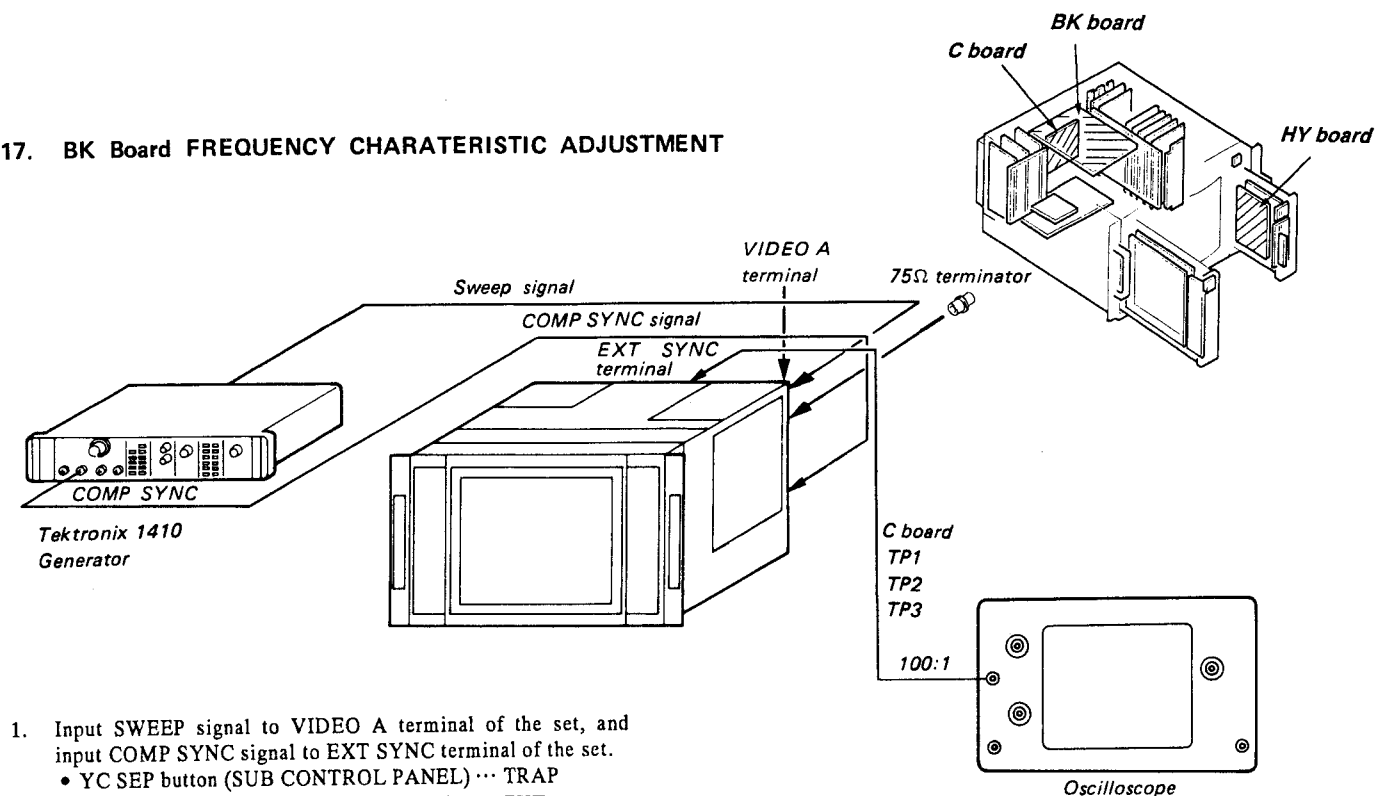


A=B

Fig. 16-1



17. BK Board FREQUENCY CHARACTERISTIC ADJUSTMENT



- Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
 - YC SEP button (SUB CONTROL PANEL) ... TRAP
 - SYNC button (SUB CONTROL PANEL) ... EXT
 - MODE selector (FRONT PANEL (L)) ... MONO ()
 - FILTER button (SUB CONTROL PANEL) ... OFF
- Connect an oscilloscope to the TP1 on the C board.
 - *Probe: 100:1
- Adjust CV101 and CV102 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
- Connect an oscilloscope to the TP2 on the C board.
- Adjust CV201 and CV202 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
- Connect an oscilloscope to the TP3 on the C board.
- Adjust CV301 and CV302 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.

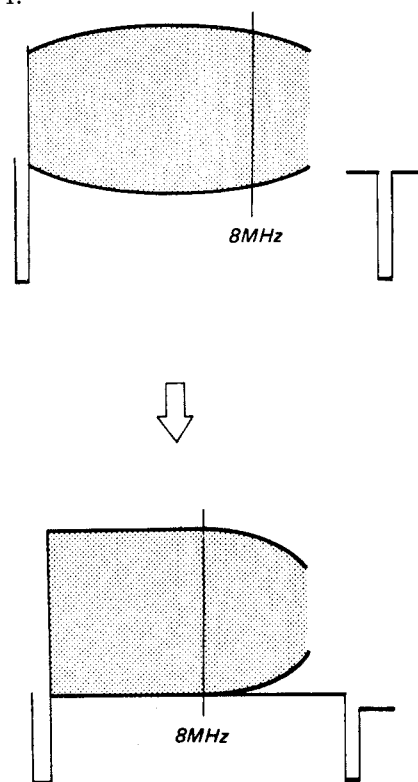
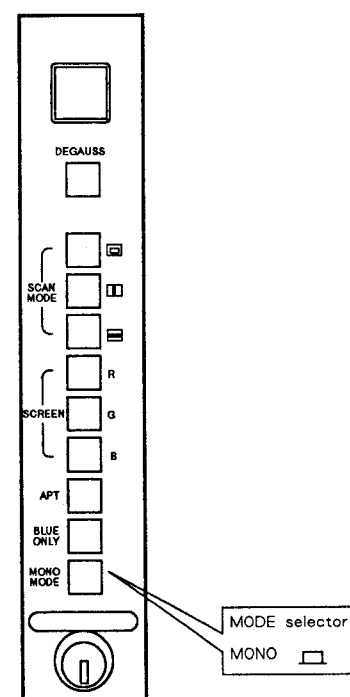
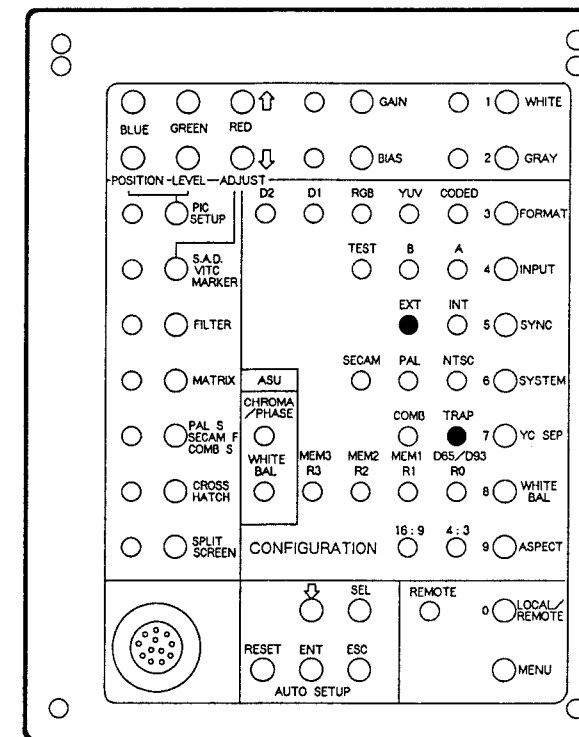


Fig. 17-1

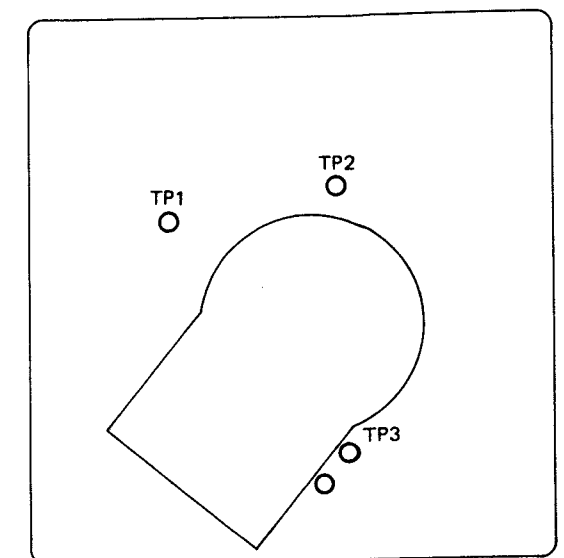
FRONT PANEL (L)



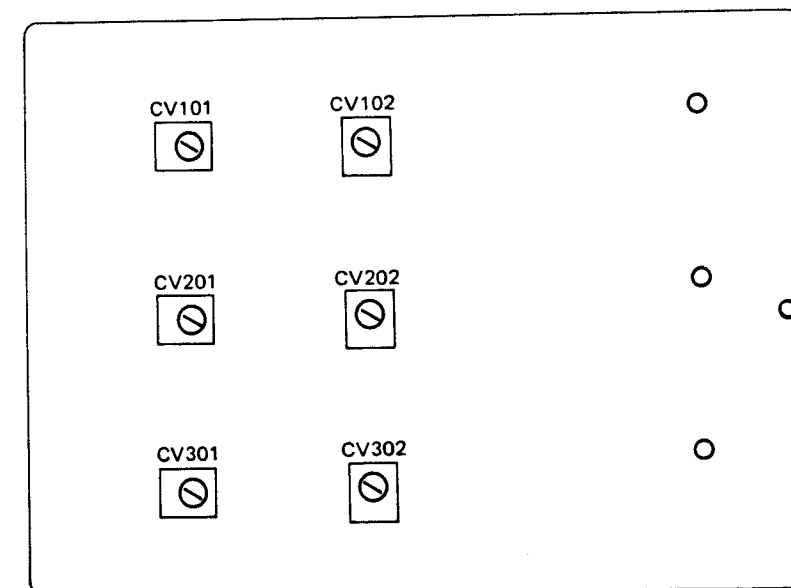
SUB CONTROL PANEL (HY board)



C board

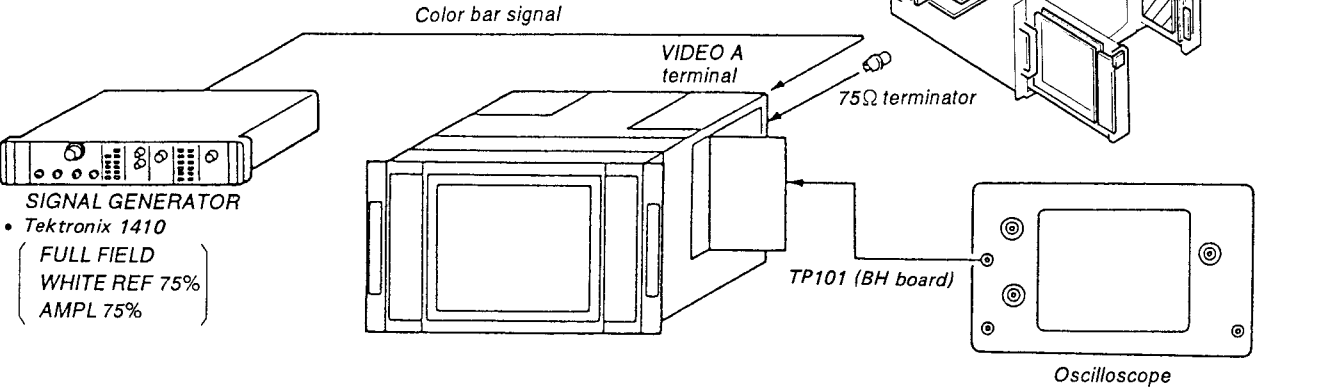


BK board



18. BT Board COMB FILTER ADJUSTMENT
(BVM-1311 ONLY)

18-1. BT Board Partial Adjustment



Luminance Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button on the sub control panel to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-1 to the center of the oscilloscope using RV3 (luminance level) on the BT board.

Chroma Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-1 to the center of the oscilloscope using RV8 (chroma level) on the BT board.

FRONT PANEL (L)

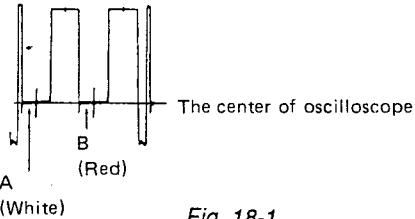
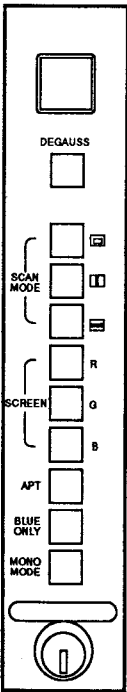
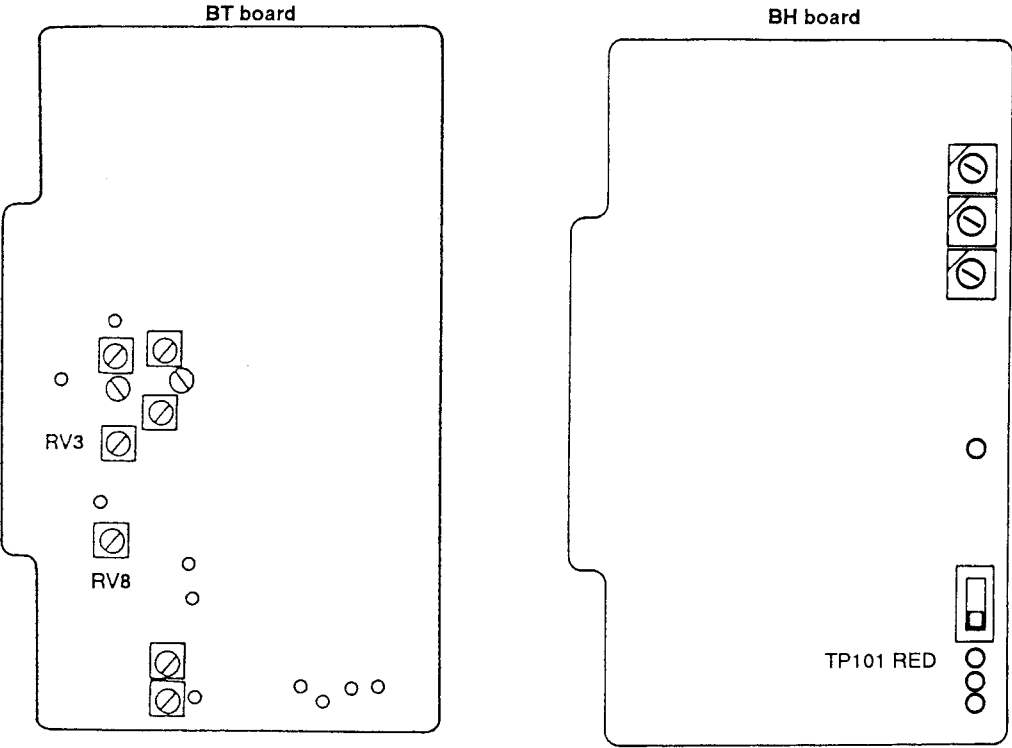
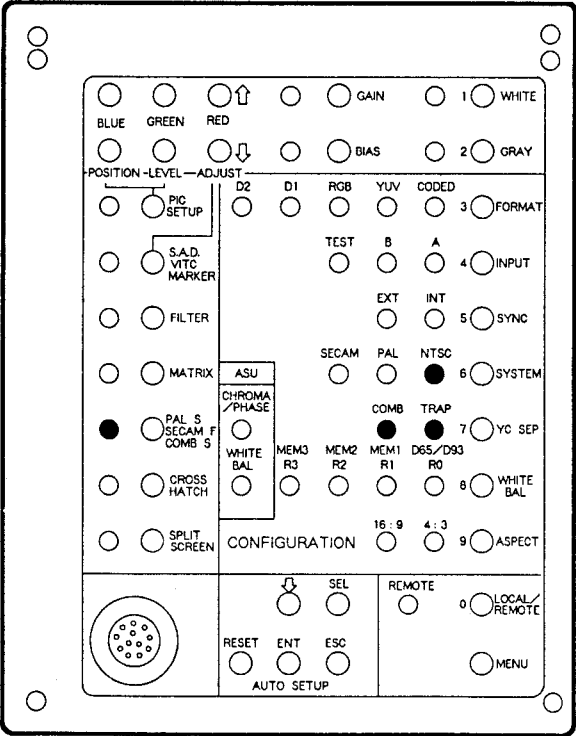


Fig. 18-1

Note: Never attempt to turn the following parts as these cannot be easily adjusted.
FL1, FL2, FL3, DL3, DL5, DL6, DL8

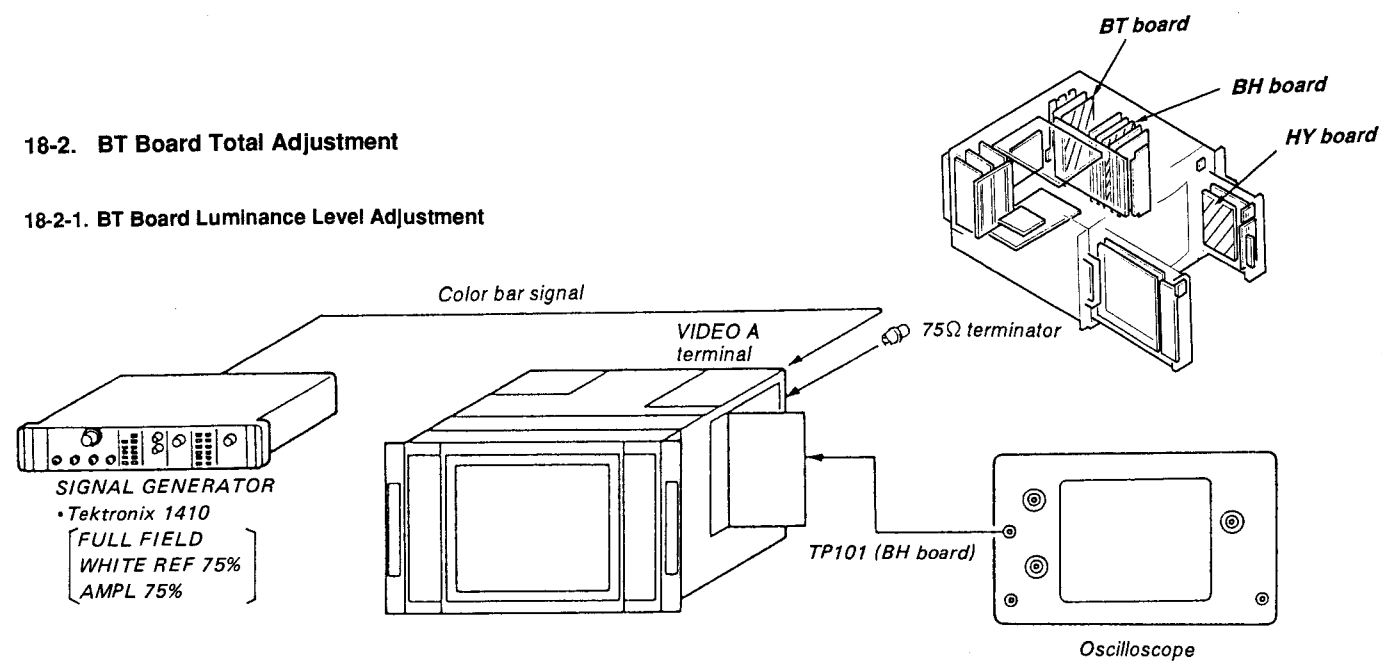


SUB CONTROL PANEL (HY board)



18-2. BT Board Total Adjustment

18-2-1. BT Board Luminance Level Adjustment



1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope until the portion A (white) of Fig. 18-2 is set to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV3 (luminance level) on the BT board.
8. Set the PAL S/SECAM F/COMB S button to the OFF.
9. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV9 (1H luminance level) on the BT board.

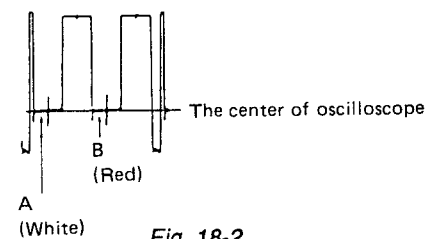
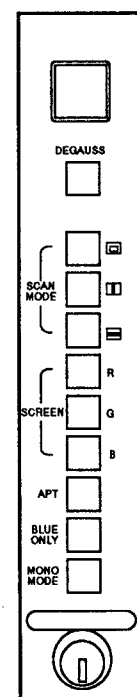
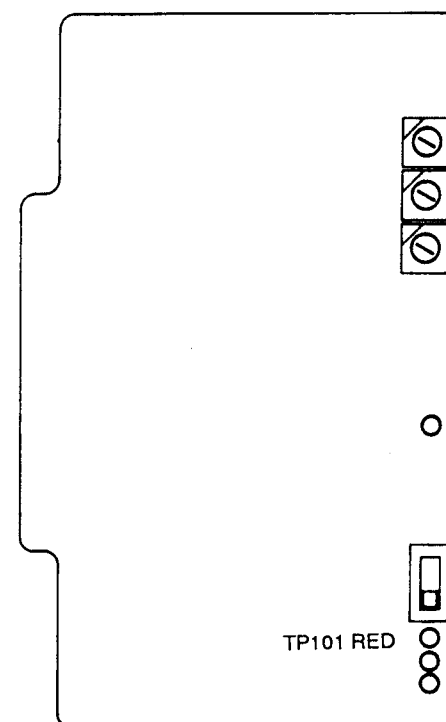


Fig. 18-2

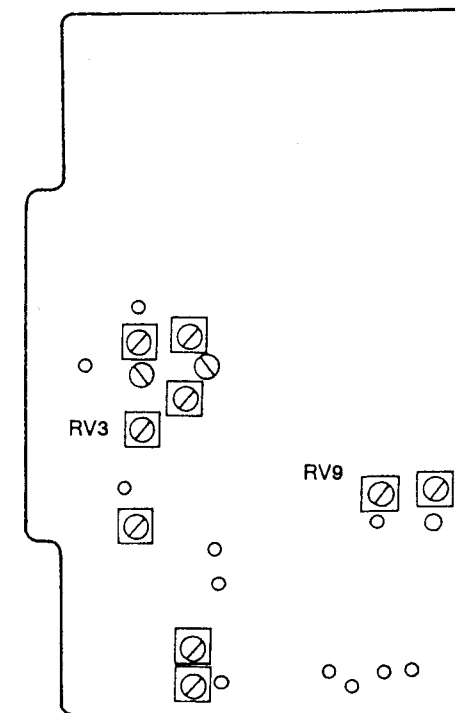
FRONT PANEL (L)



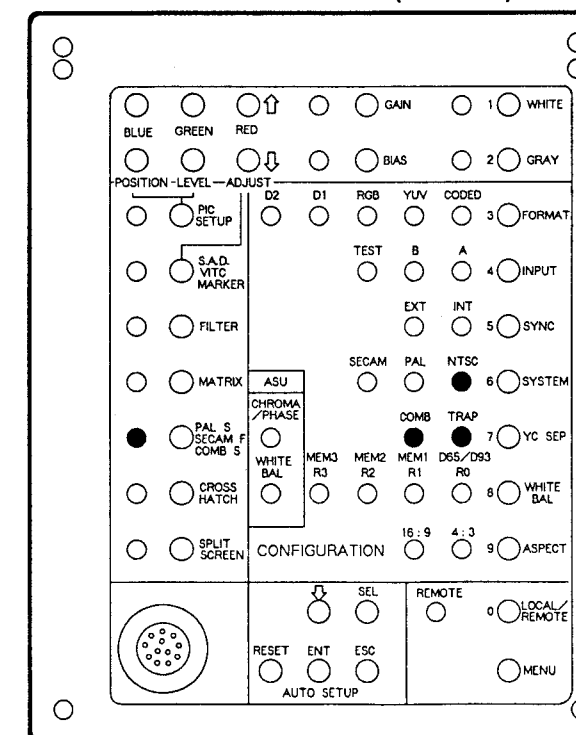
BH board



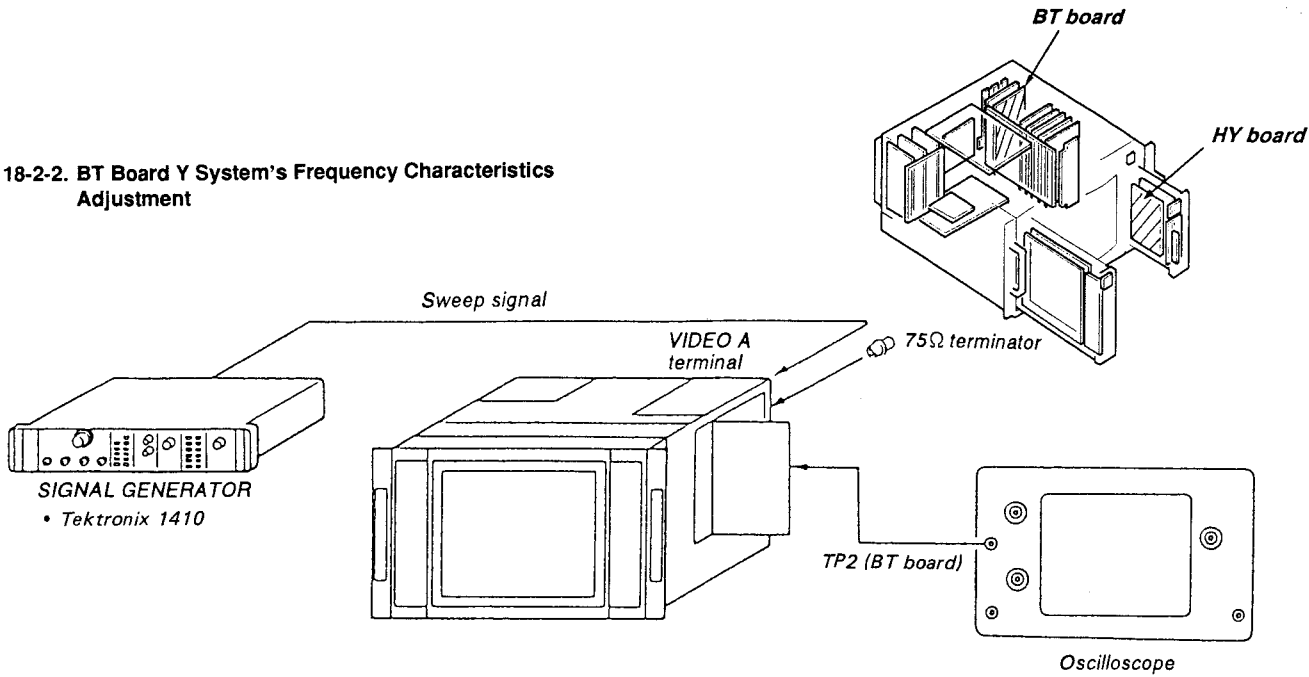
BT board



SUB CONTROL PANEL (HY board)



18-2-2. BT Board Y System's Frequency Characteristics Adjustment



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the COMB position.
3. Connect the oscilloscope to TP2 on the BT board. (AC 0.1 V/div:V)
4. Set CV5 to the position as shown in Fig. 18-3.
5. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
6. Adjust the frequency characteristics until it is made flat using CV1 (Y FREQ) on the BT board. If it cannot be properly adjusted by using CV1, use CV5 (Y FREQ).
7. Set the PAL S/SECAM F/COMB S button to the OFF.
8. Adjust the frequency characteristics until it is made flat using CV2 (1H Y FREQ) on the BT board.
9. Set CV3 (CLK PHASE) and CV4 (CLK PHASE) on the BT board to the position as shown in Fig. 18-4.
10. Adjust the clock phase until it becomes just as shown in Fig. 18-5 using CV3.
11. If it cannot be adjusted with CV3, adjust with CV4 by returning CV3 to the position of Fig. 18-4.



Fig. 18-3



Fig. 18-4

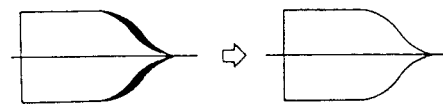
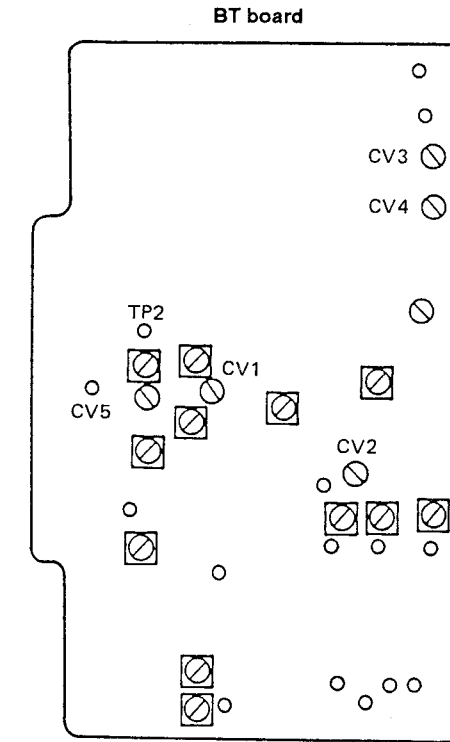
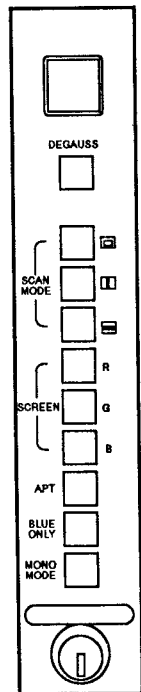
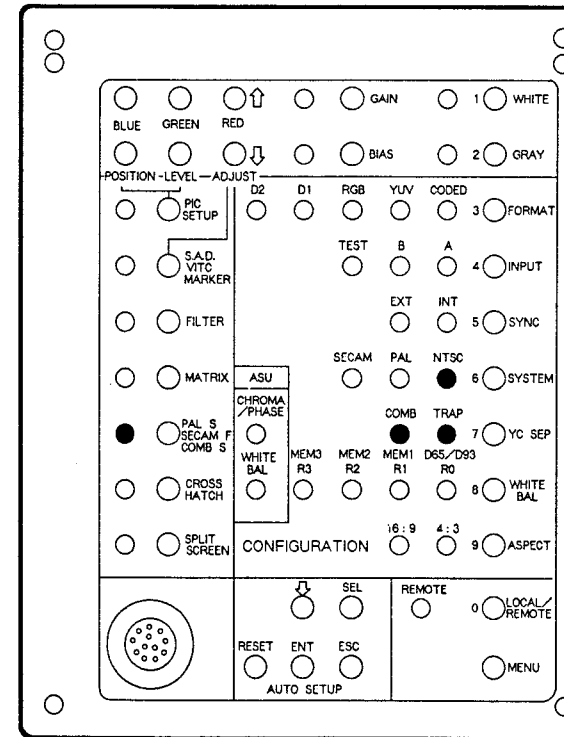


Fig. 18-5

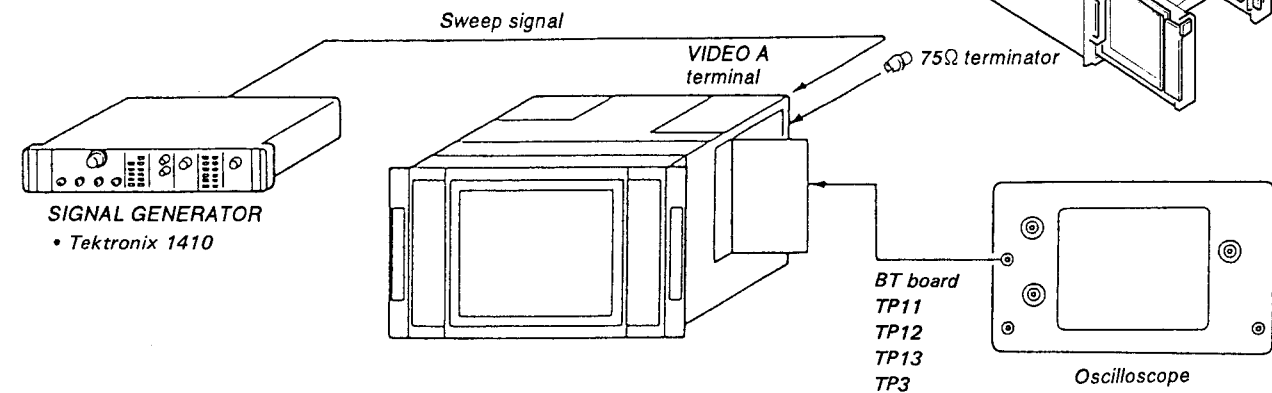
FRONT PANEL (L)



SUB CONTROL PANEL (HY board)



18-2-3. BT Board Band-pass Filter Adjustment (Adjust only when DL3, 5, 6 and 8 are replaced.)



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the front panel to the ON.
3. Connect the oscilloscope to TP11.
4. Adjust the frequency characteristics using DL3 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-6 with 3.58 MHz as center frequency.
5. Connect the oscilloscope to TP12.
6. Adjust the frequency characteristics using DL6 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-6 with 3.58 MHz as center frequency.
7. Connect the oscilloscope to TP13.
8. Adjust the frequency characteristics using DL8 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-6 with 3.58 MHz as center frequency.
9. Connect the oscilloscope to TP3.
10. Adjust the frequency characteristics using DL5 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-6 with 3.58 MHz as center frequency.

FRONT PANEL (L)

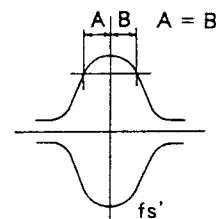
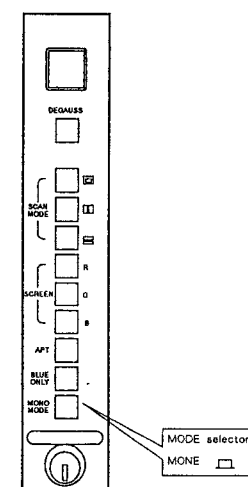
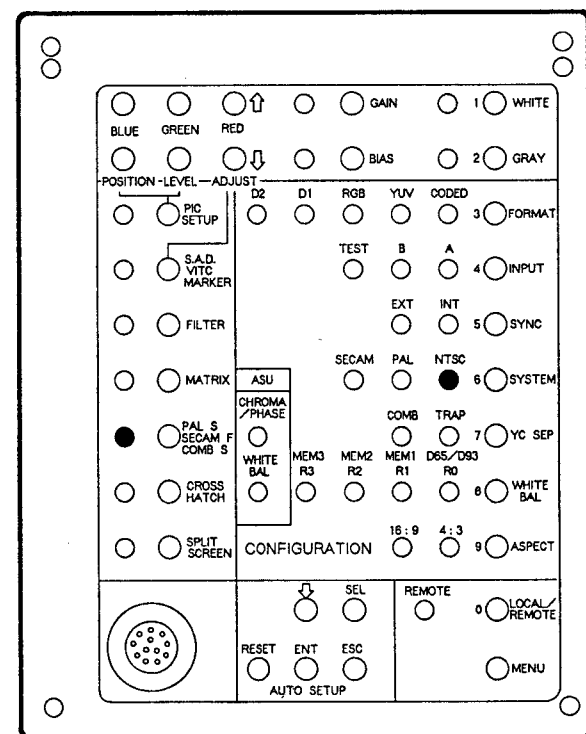
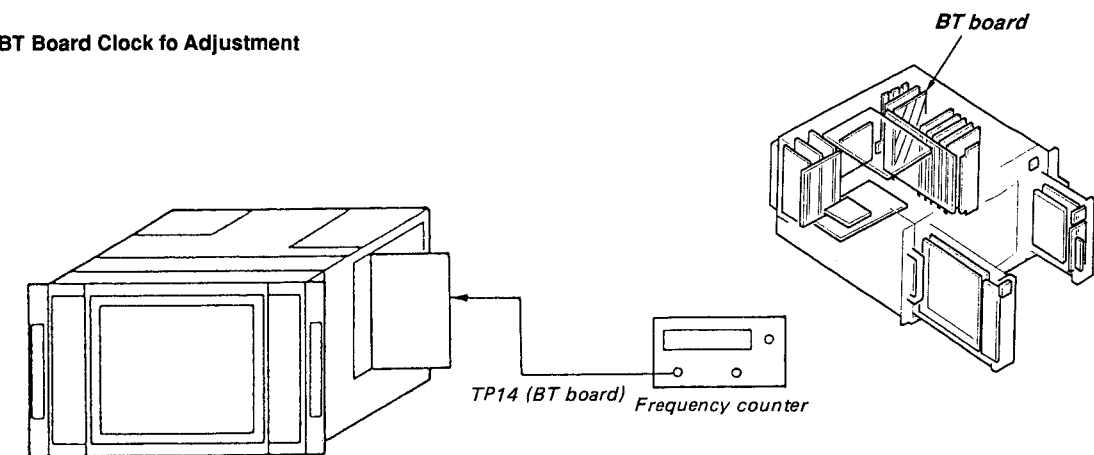


Fig. 18-6

SUB CONTROL PANEL (HY board)

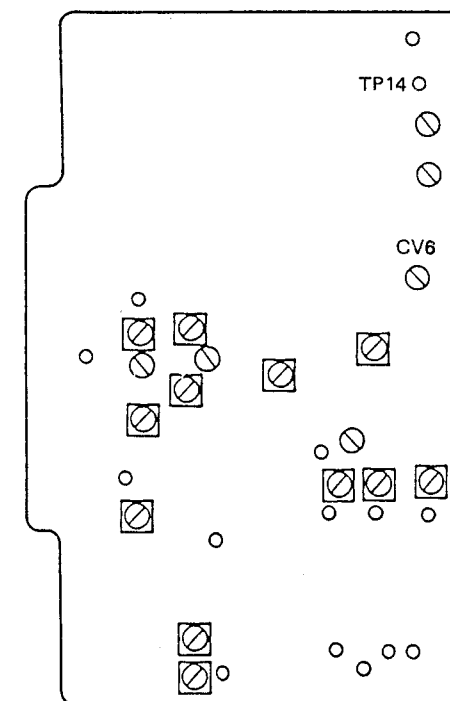


18-2-4. BT Board Clock to Adjustment

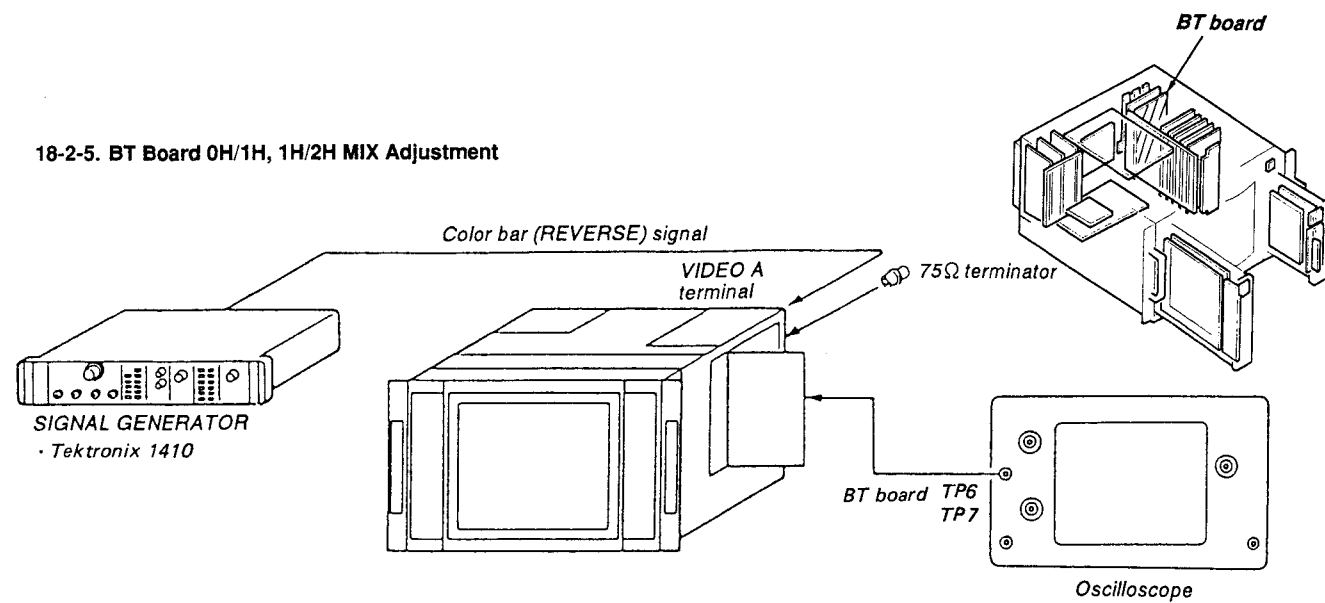


1. Connect the frequency counter to TP14.
2. Make adjustment as shown below using CV6 (CLK FREQ) on the BT board.
• $f_0 = 21.477 \text{ MHz}$

BT board



18-2-5. BT Board 0H/1H, 1H/2H MIX Adjustment



1. Feed a color bar signal (REVERSE) to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP6 to magnify the signal inverted area.
3. Turn RV5 (0H/1H MIX LEVEL) and RV10 (0H/1H MIX PHASE) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.
4. Connect the oscilloscope to TP7.
5. Turn RV12 (1H/2H MIX PHASE) and RV11 (1H/2H MIX LEVEL) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.

Enlarged view of inverted signal section

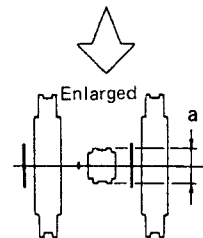
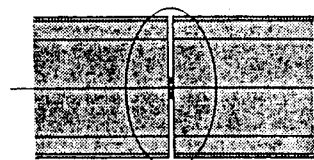
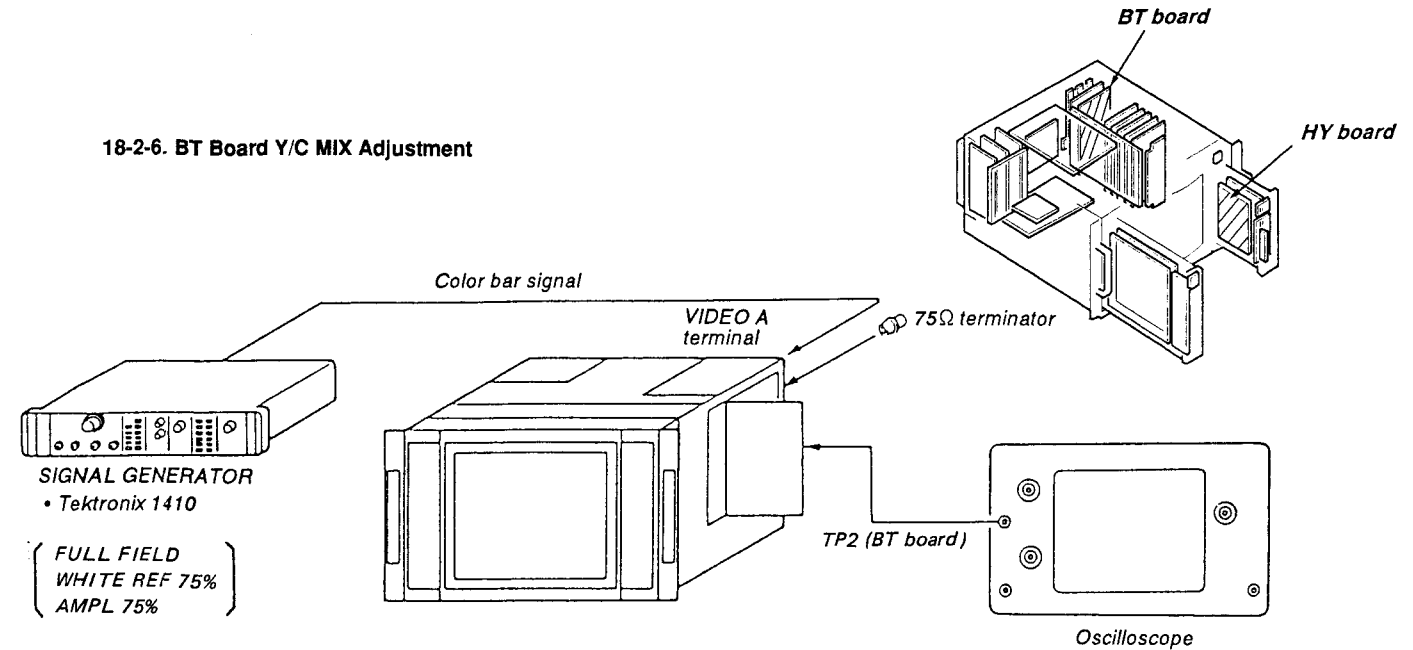


Fig. 18-7

18-2-6. BT Board Y/C MIX Adjustment



(FULL FIELD
WHITE REF 75%
AMPL 75%)

1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP2 on the BT board.
3. Set the PAL S/SECAM F/COMB S button on the sub control panel to the OFF.
4. Turn RV1 (Y/C MIX PHASE) and RV2 (Y/C MIX LEVEL) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.

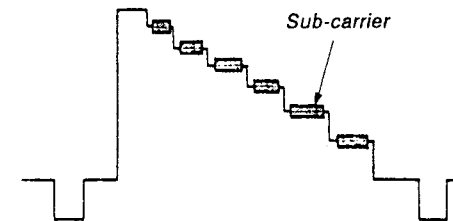
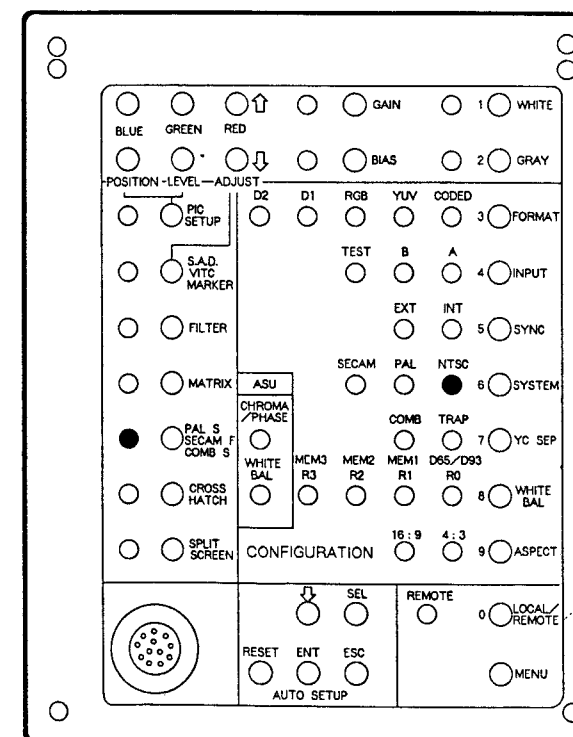


Fig. 18-8

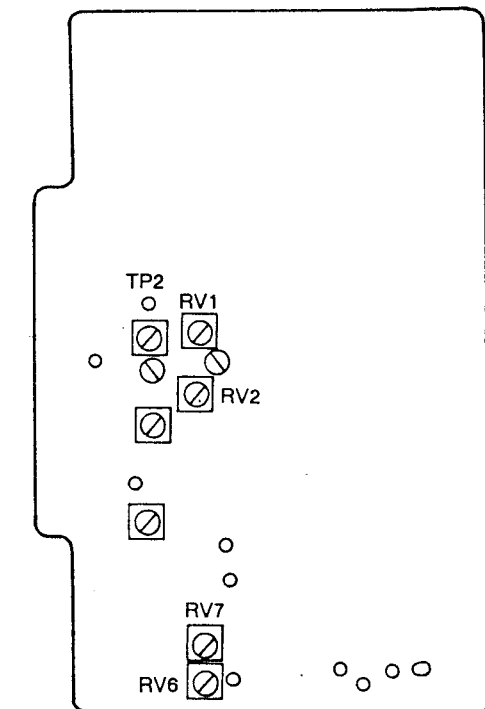
SUB CONTROL PANEL (HY board)



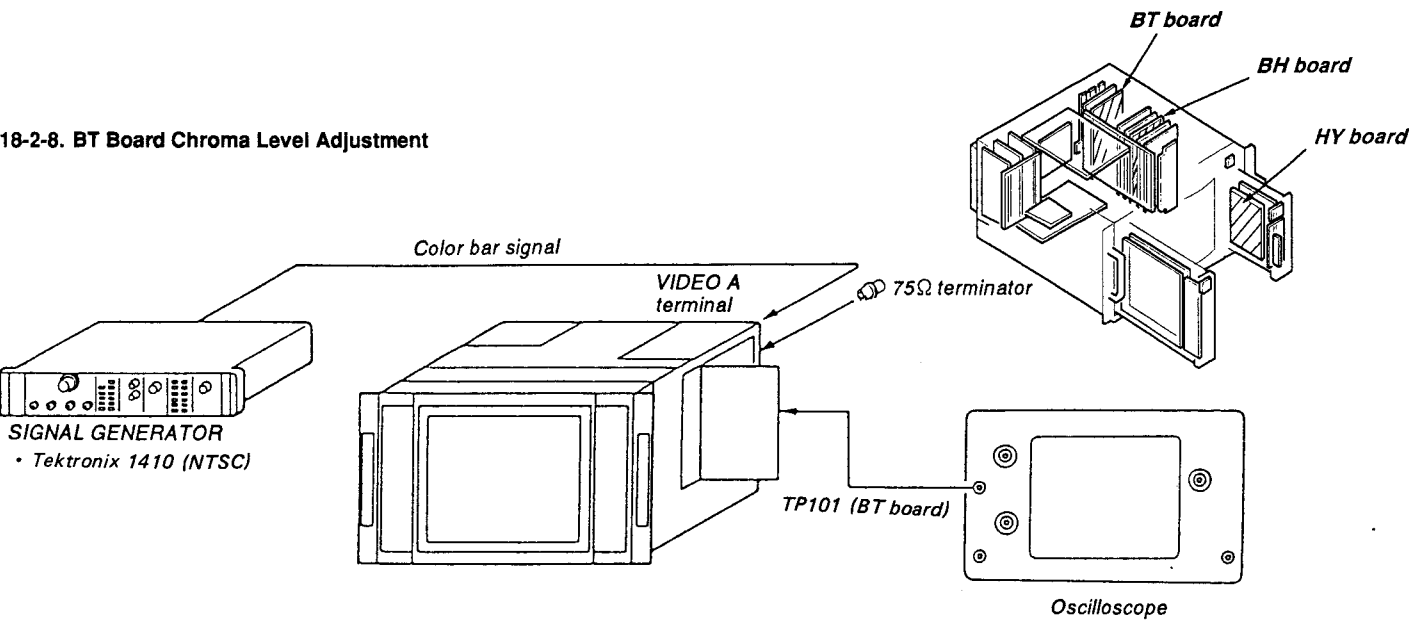
18-2-7. BT Board S COMB Adjustment

1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
3. Connect the oscilloscope to TP2 on the BT board.
4. Turn RV6 (S COMB C Level) and RV7 (S COMB C PHASE) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.

BT board



18-2-8. BT Board Chroma Level Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BT board.
(DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion B (red) of Fig. 18-9 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-9 to the center of the oscilloscope using RV8 (C OUTPUT LEVEL) on the BT board.

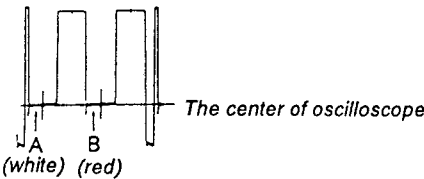
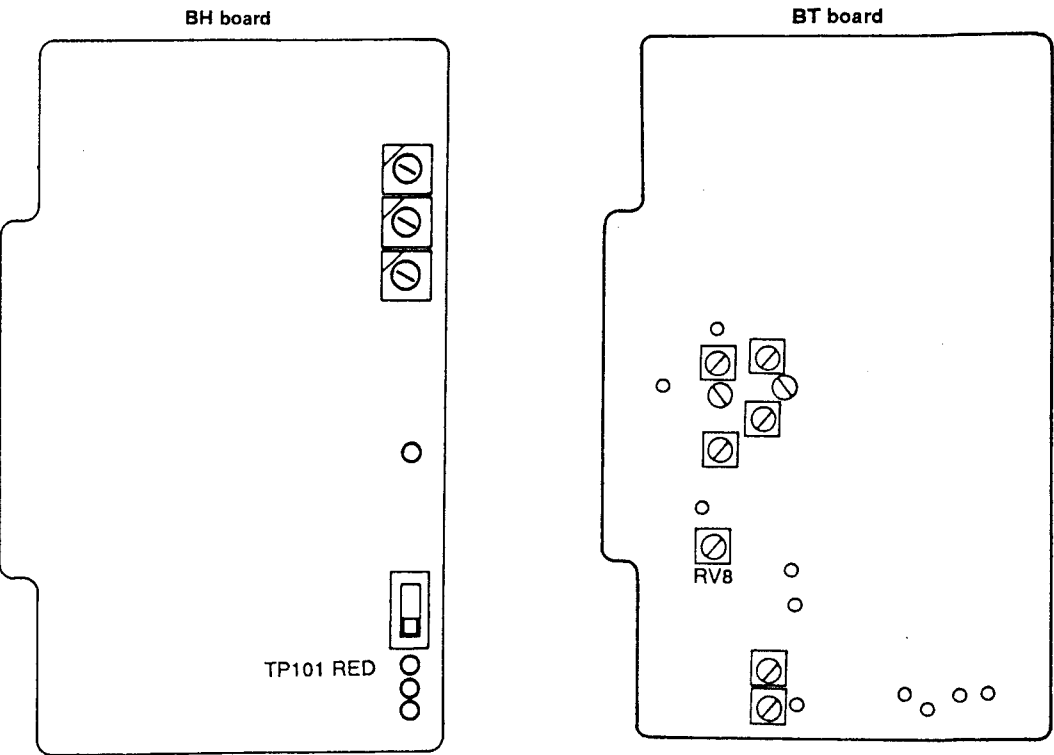
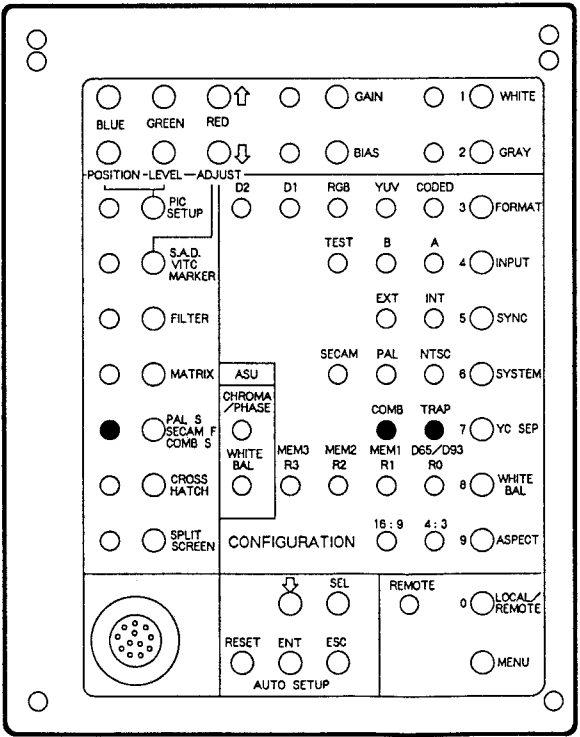


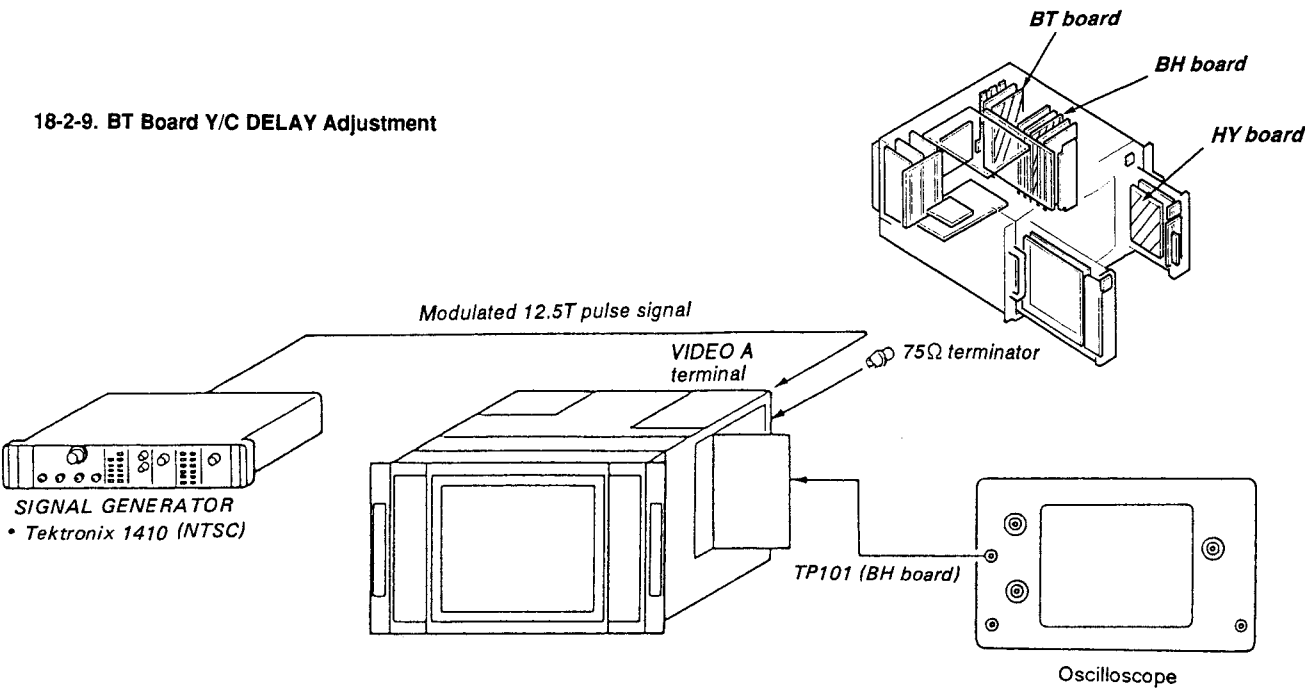
Fig. 18-9



SUB CONTROL PANEL (HY board)



18-2-9. BT Board Y/C DELAY Adjustment



- MODE selector (FRONT PANEL (L)) MONO
1. Feed a 12.5T pulse signal to the VIDEO A terminal of this set.
 2. Set the PAL S/SECAM F/COMB S button to the ON.
 3. Connect the oscilloscope to TP101 on the BH board.
 4. Turn the CHROMA MANUAL control (on the front panel (R)) until the chroma signal is adjusted as shown in Fig. 18-10.
 5. After adjustment, turn RV4 (Y/C DELAY) on the BT board until the waveform is symmetrical.

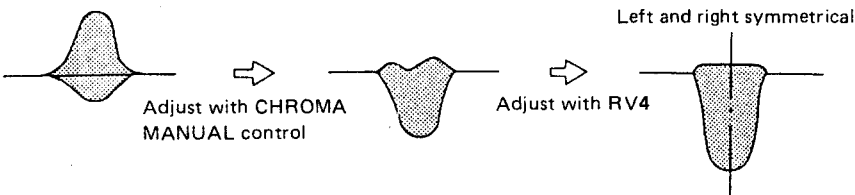
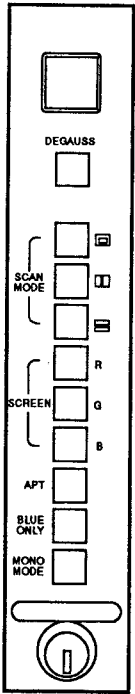
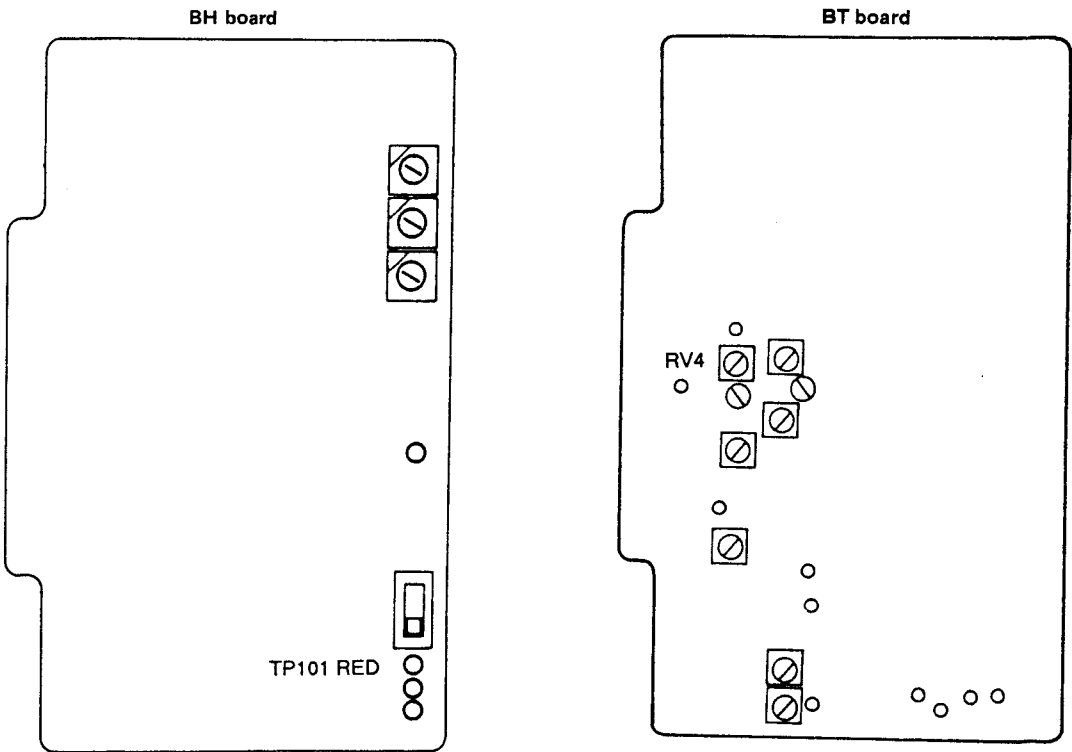
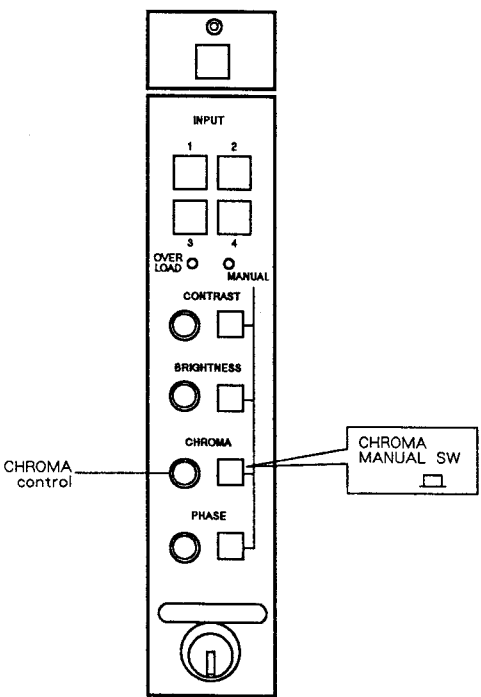


Fig. 18-10

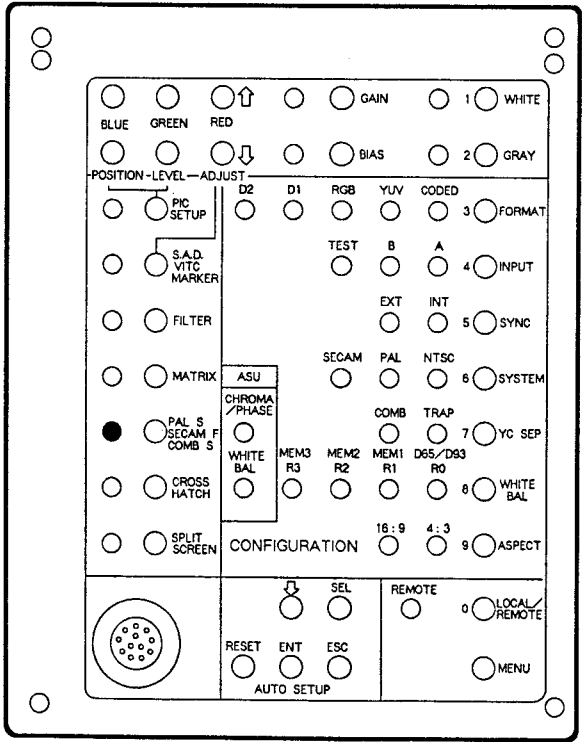
FRONT PANEL (L)



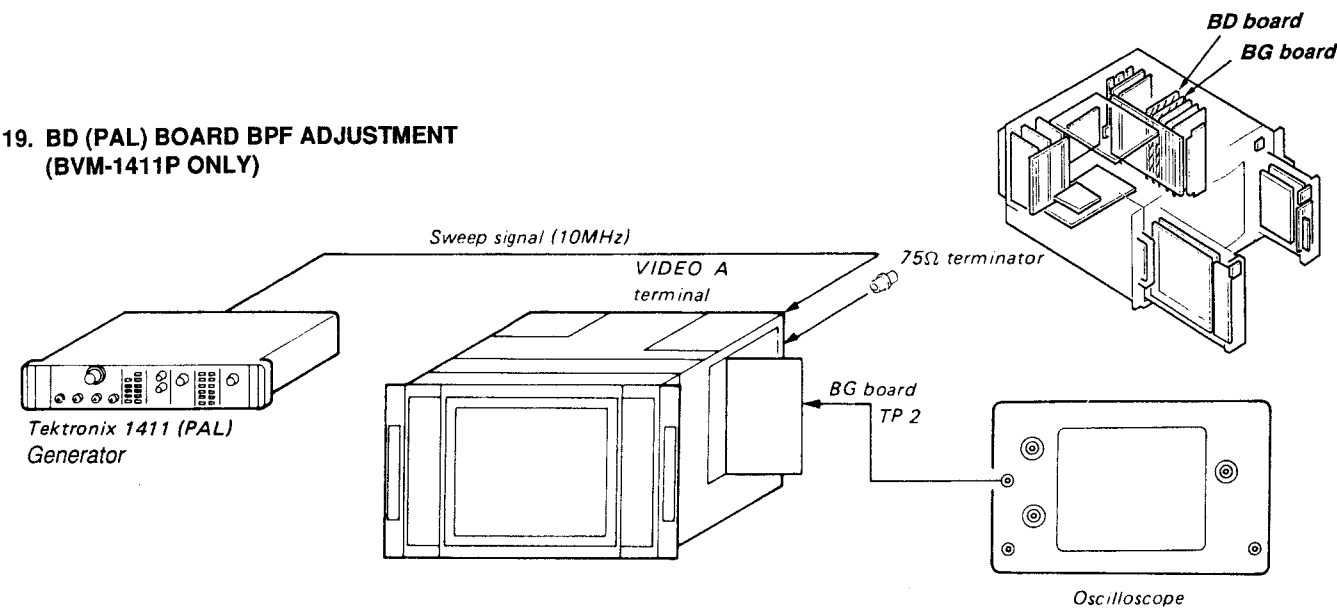
FRONT PANEL (R)



SUB CONTROL PANEL (HY board)



19. BD (PAL) BOARD BPF ADJUSTMENT
(BVM-1411P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL (R)) ON

1. Input SWEEP signal (10MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/div of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 19-1.

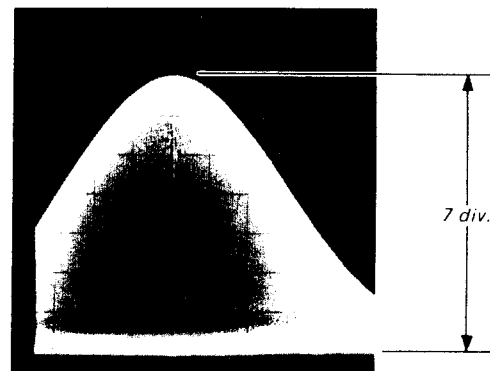
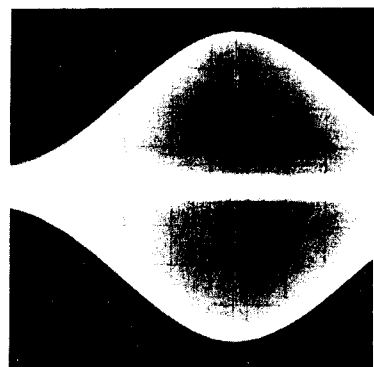
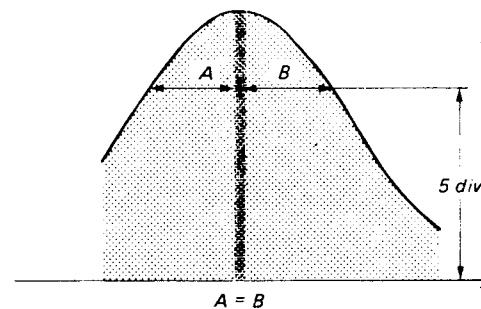
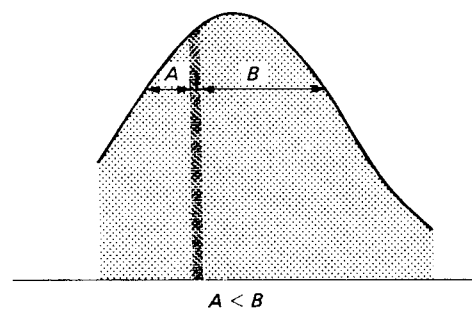


Fig. 19-1

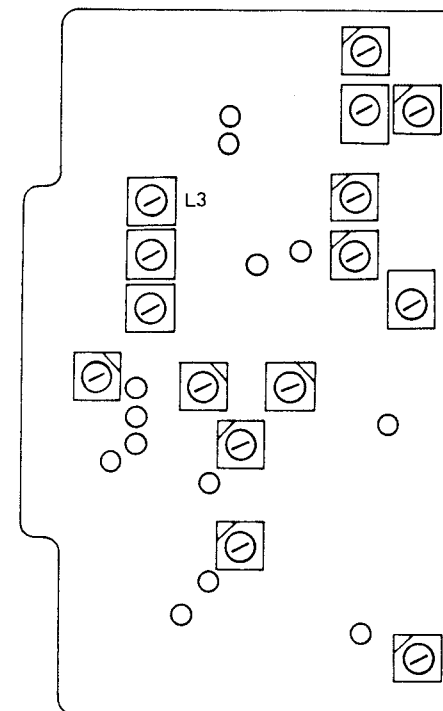
4. Adjust L3 on the BD board so that A is equal to B as shown in Fig. 19-2.



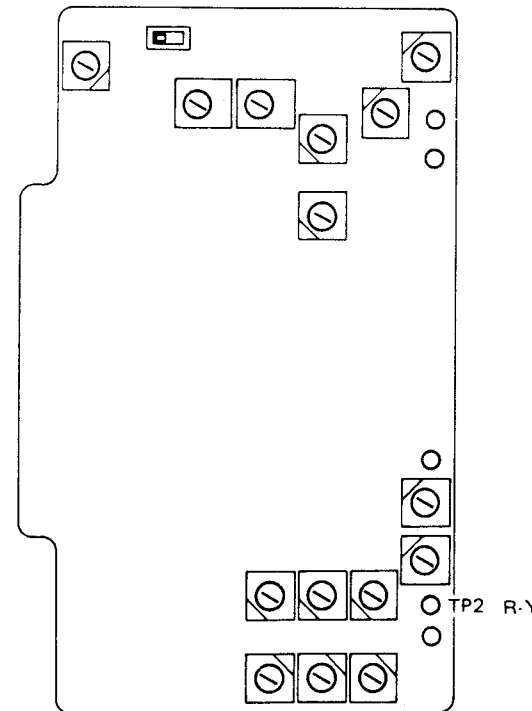
A is equal to B when the amplitude is 5 div.

Fig. 19-2

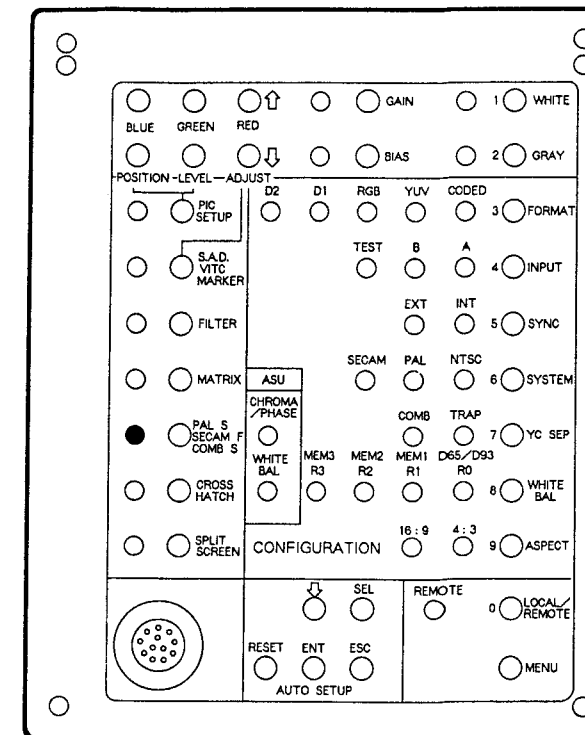
BD board



BG board



SUB CONTROL PANEL (HY board)



**20. BD (PAL) BOARD PHASE SHIFT ADJUSTMENT
(BVM-1411P ONLY)**

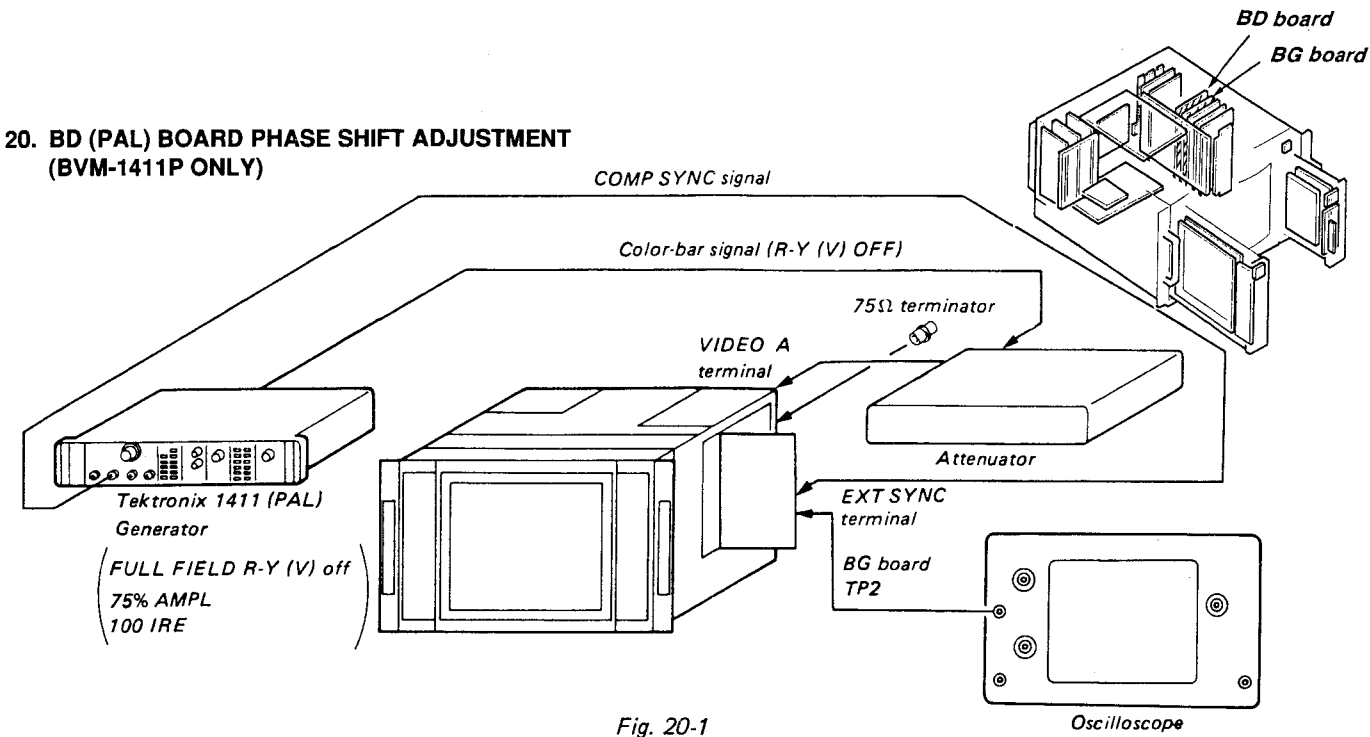


Fig. 20-1

- SYNC button (SUB CONTROL PANEL)..... EXT
- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
- RV2 (BD BOARD).....MECHANICAL CENTER
- CV1 (BD BOARD).....MECHANICAL CENTER
- CV2 (BD BOARD).....MECHANICAL CENTER

1. Complete the connection as shown in Fig. 20-1.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 20-2.

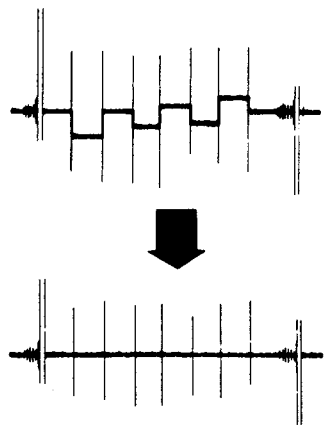
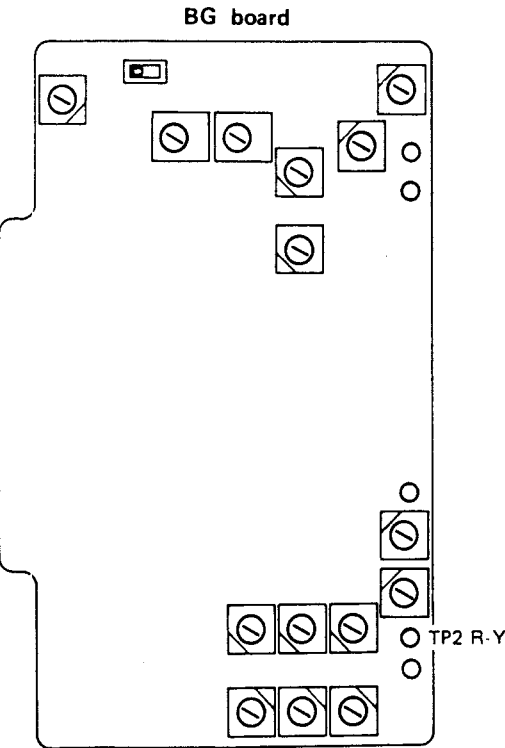
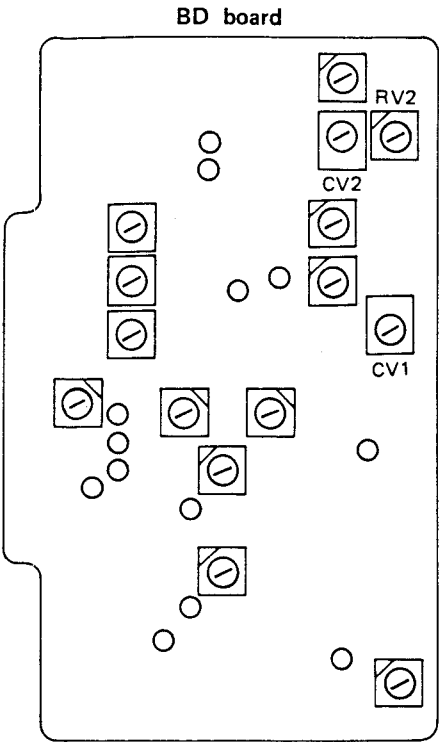
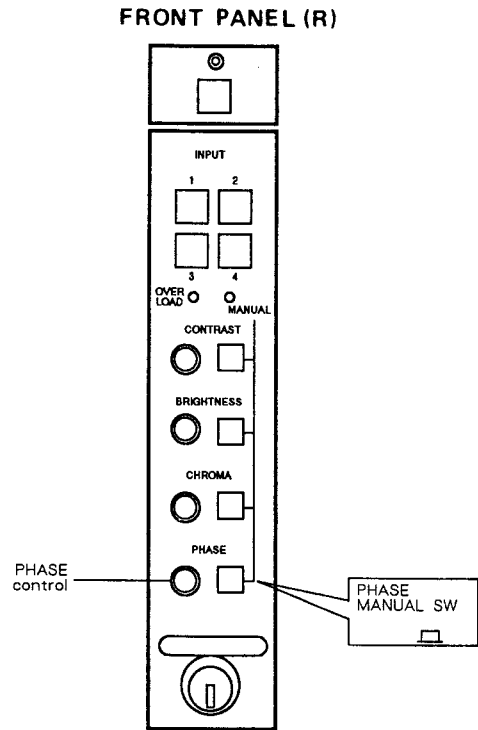
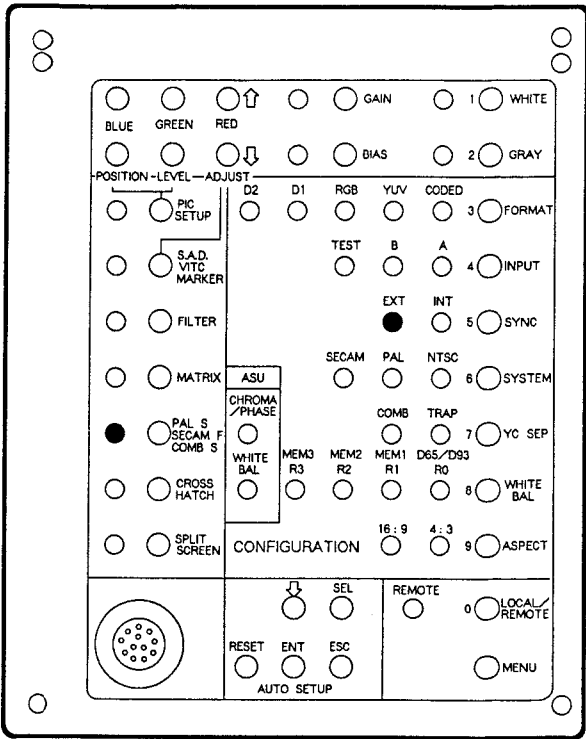


Fig. 20-2

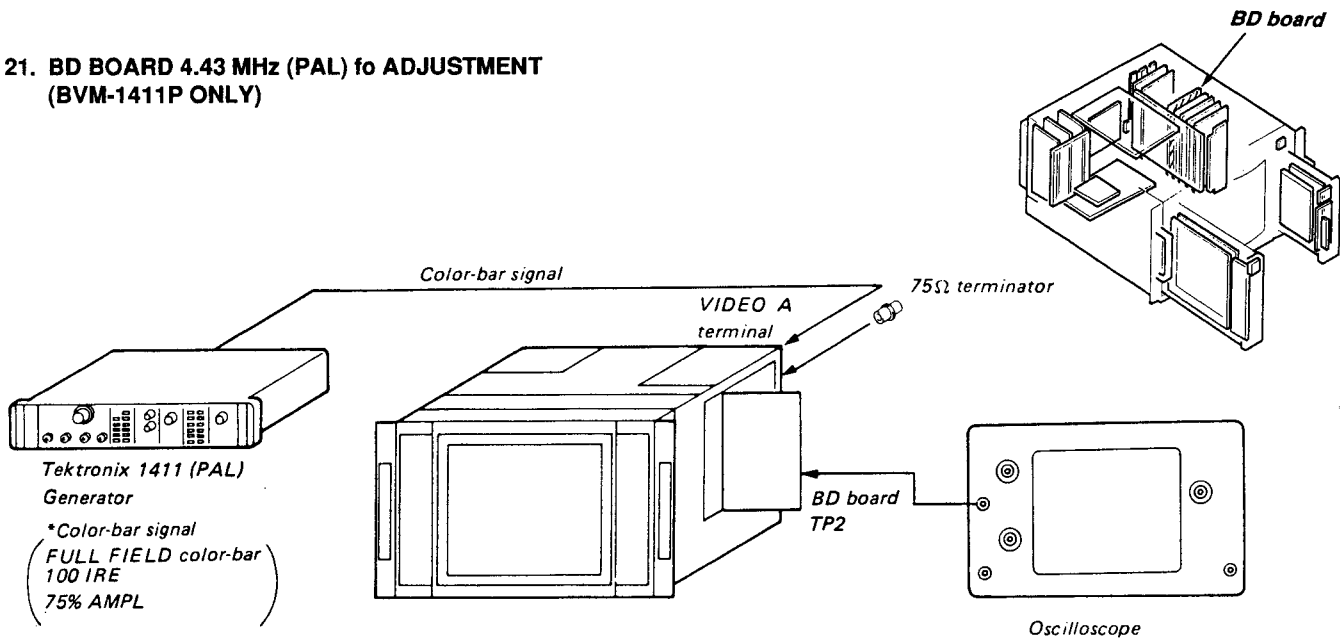
4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD board so that the output waveform becomes flat as shown in Fig. 20-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.



SUB CONTROL PANEL (HY board)



21. BD BOARD 4.43 MHz (PAL) fo ADJUSTMENT
(BVM-1411P ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD board.
3. Short-circuit between TP11, 12 of BD board with a jumper wire.
4. Adjust CV2 of BD board so that the output waveform is shifted slowly as shown in Fig. 21-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD board.

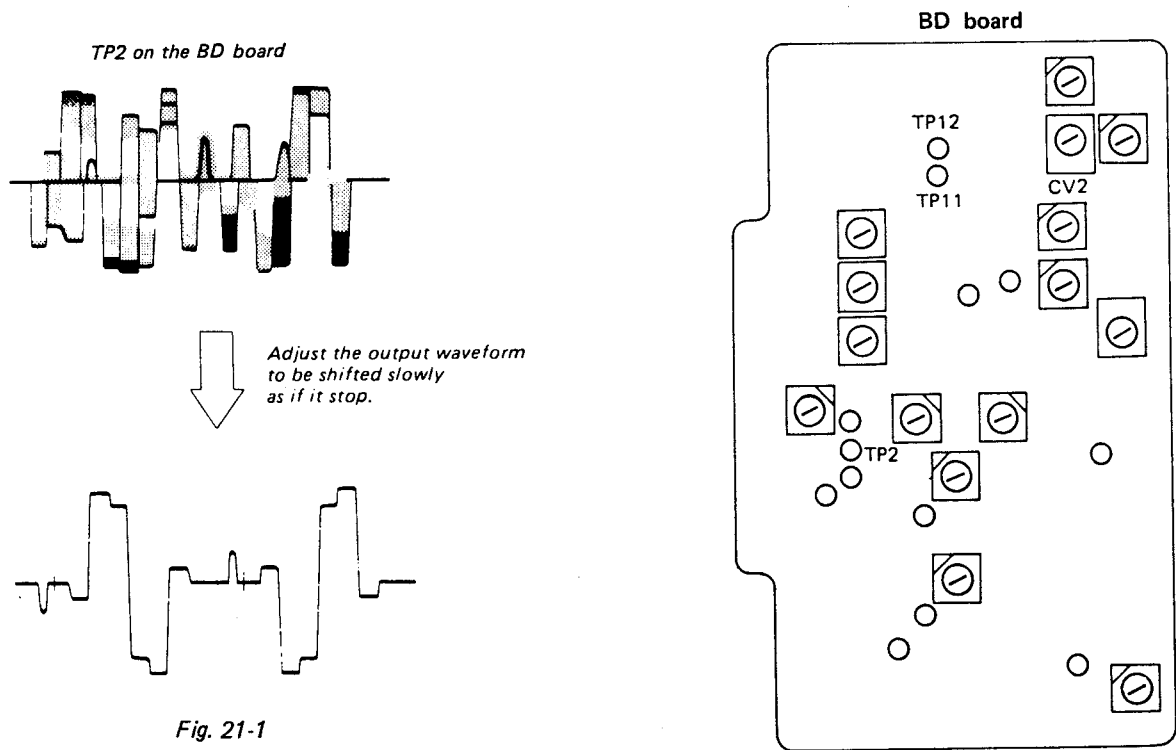


Fig. 21-1

22. BD BOARD (PAL) COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1411P ONLY)

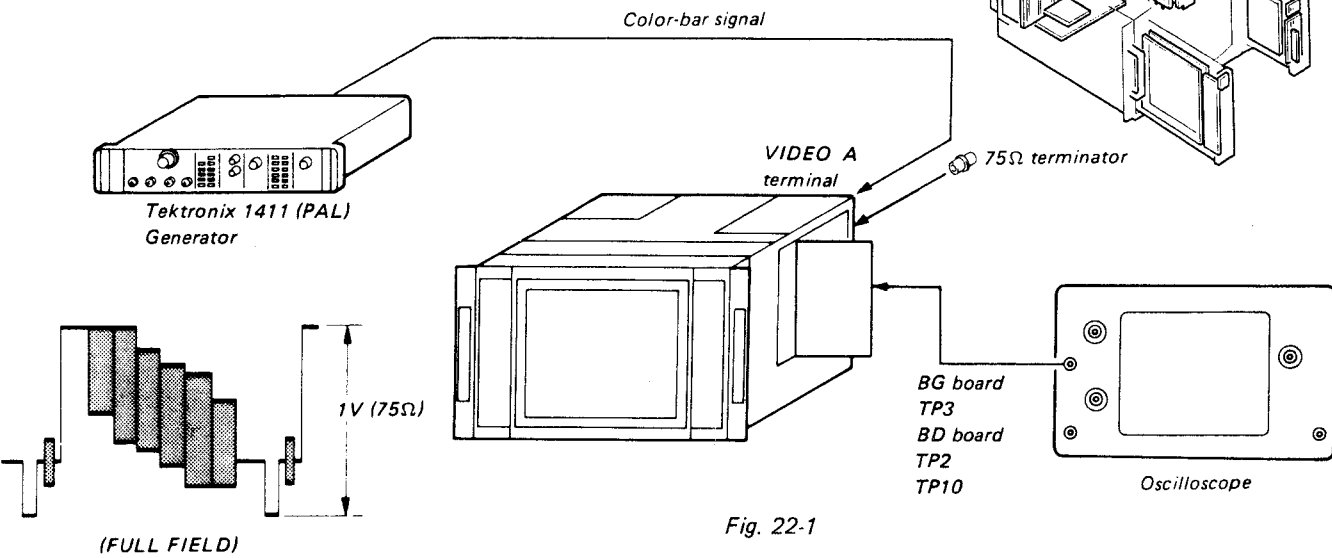


Fig. 22-1

1. Complete the connections as shown in Fig. 22-1.
2. Turn on the power of this monitor. Set the INPUT switch to the 1 position, the SYNC switch to the INT position, and the PAL S/SECAM F/COMB S button to the ON.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD board so that the output waveform is flat. (See Fig. 22-2.)

SUB CONTROL PANEL (HY board)

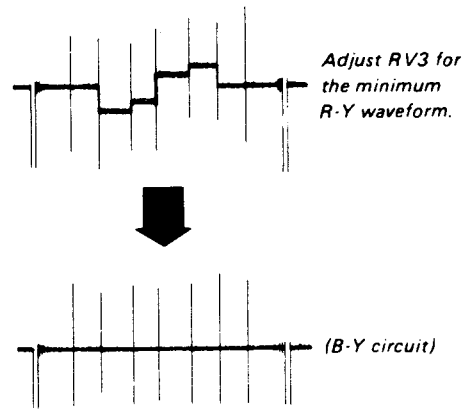
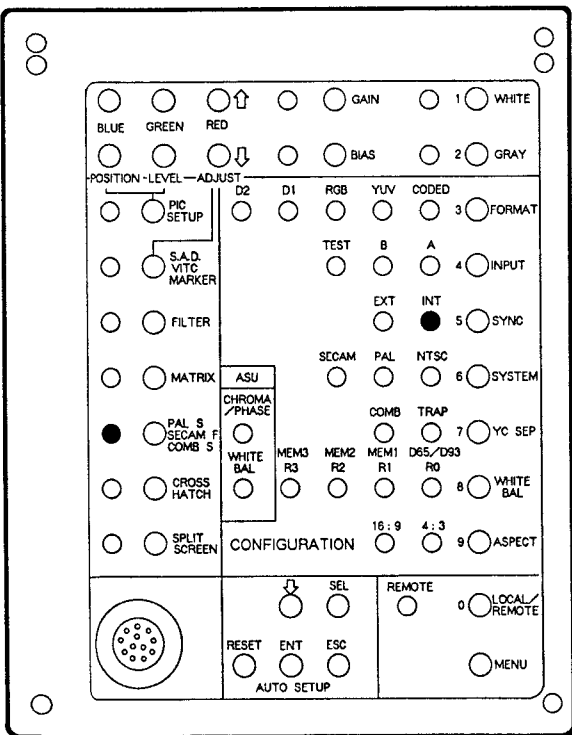


Fig. 22-2

Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BD board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD board so that the output waveform is flat. (See Fig. 22-3.)
6. Repeat the steps 3 to 6.

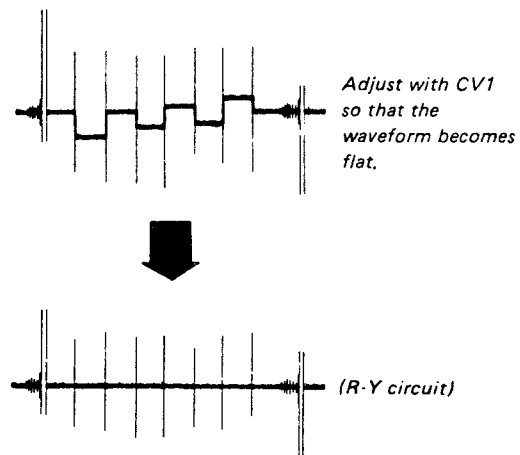
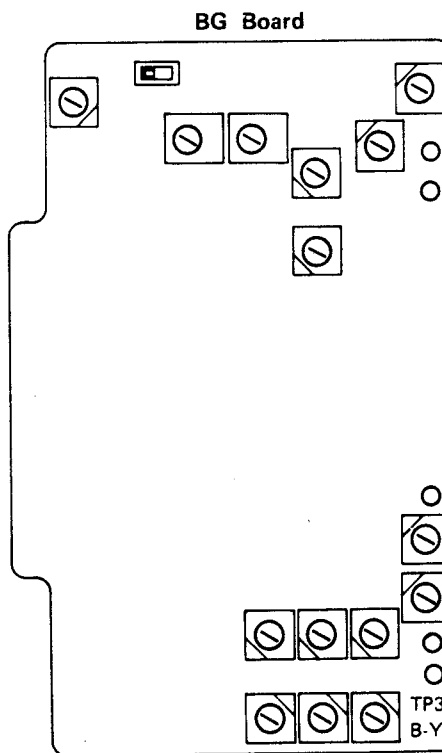
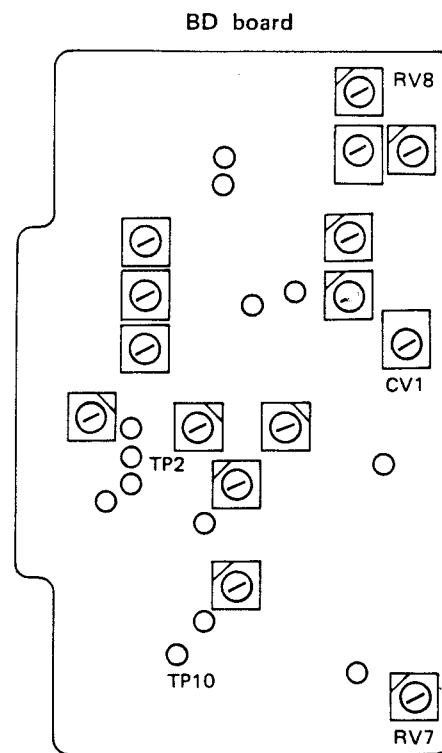


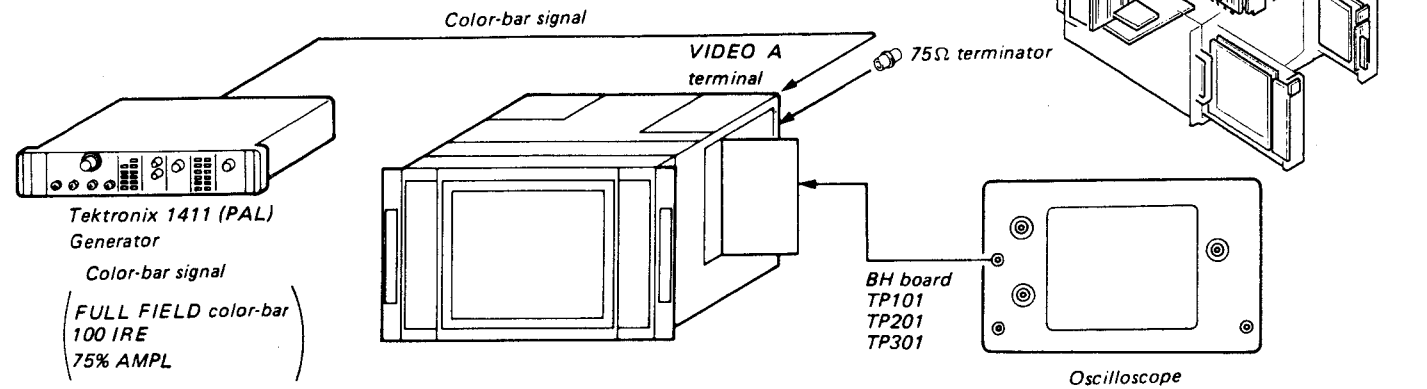
Fig. 22-3

PAL-D Phase Adjustment

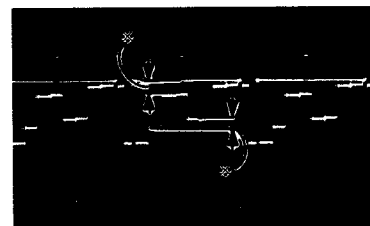
7. Set the PAL S/SECAM F/COMB S button to the OFF and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 22-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD board to the set, without using the extension board.



23. BD BOARD (PAL) COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1411P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
1. Input color-bar signal to the VIDEO A terminal of the set.
 2. Connect an oscilloscope to the TP101 of BH board.
 3. Adjust RV3 of BD or BM board so that the levels with * is flat as shown in Fig. 23-1.

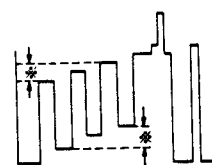


TP101 R OUT

Fig. 23-1

* Adjust the levels with * to be flat respectively using RV3 of BD board.

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV4 of BD board so that the output waveform as shown in Fig. 23-2.



TP103 B OUT

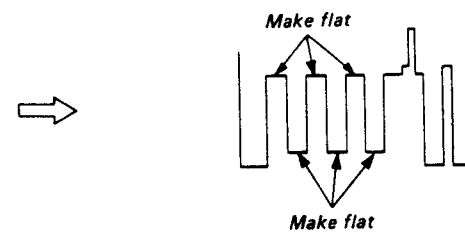
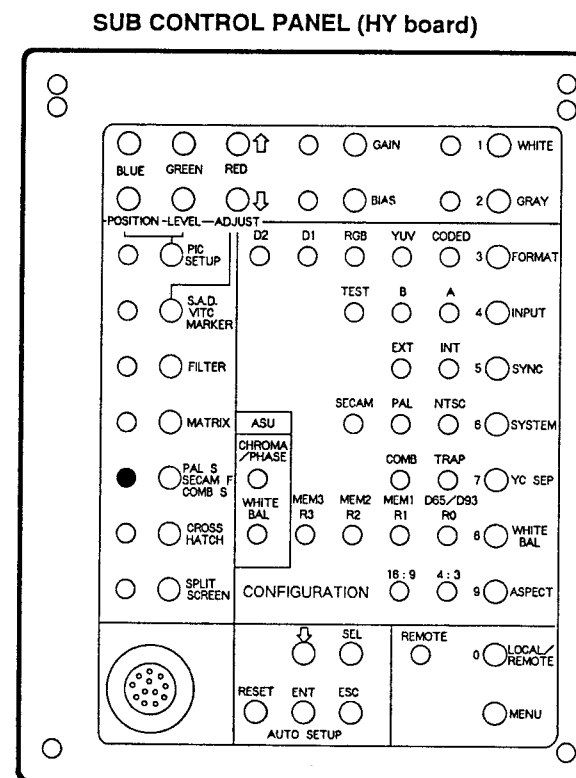
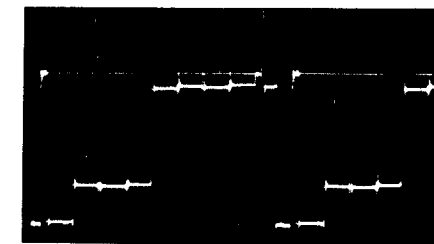


Fig. 23-2



6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 23-3.



TP201 G OUT

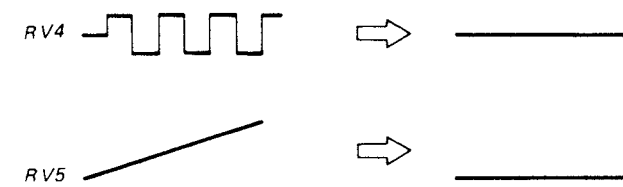
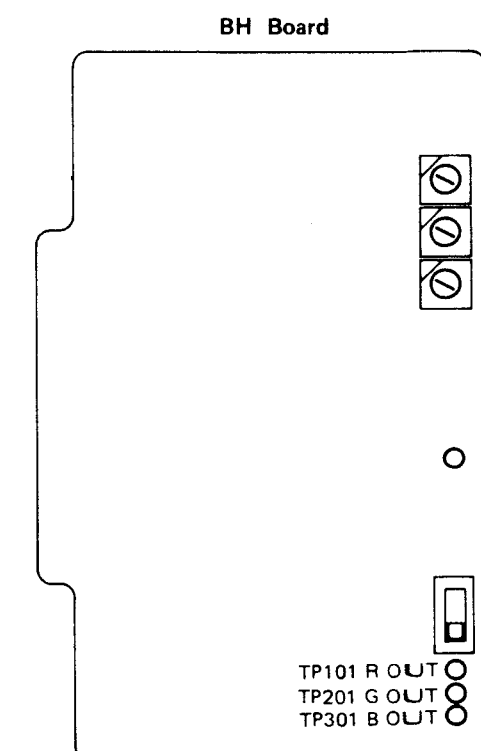
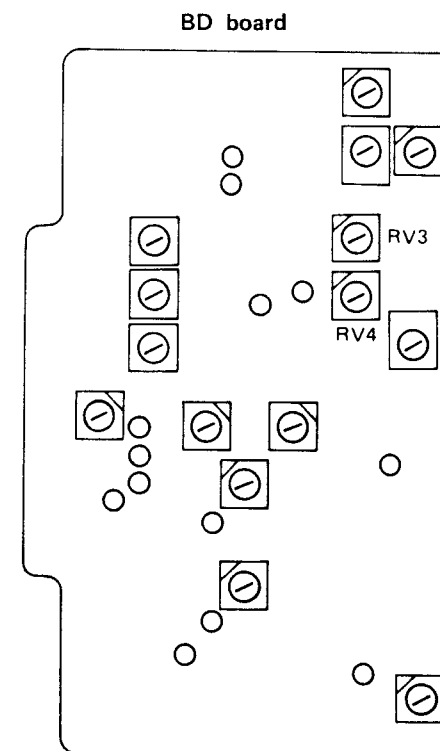
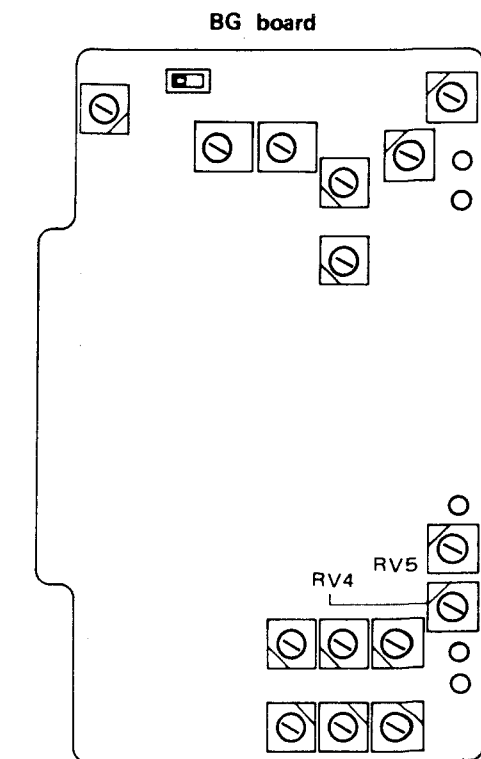
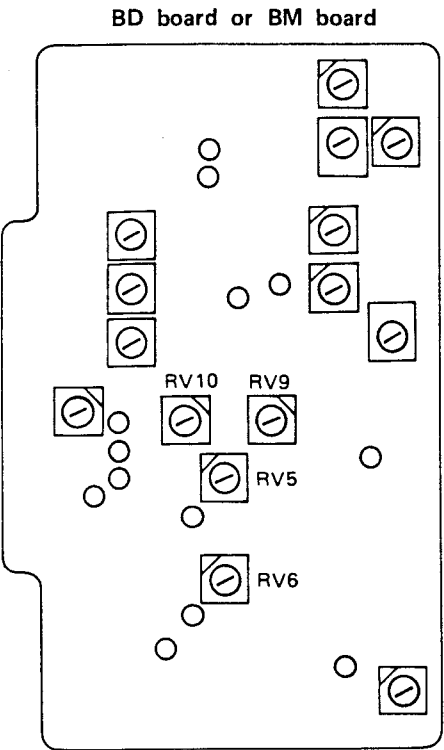
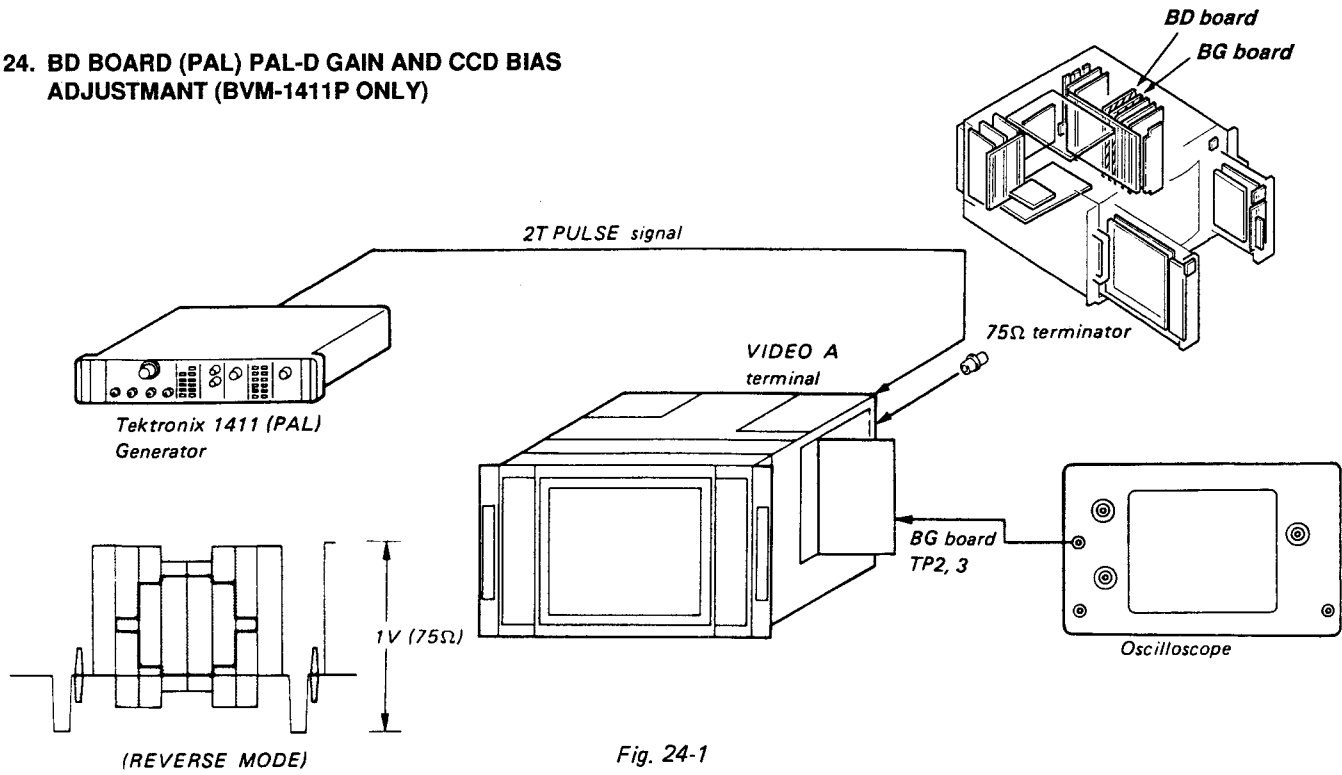


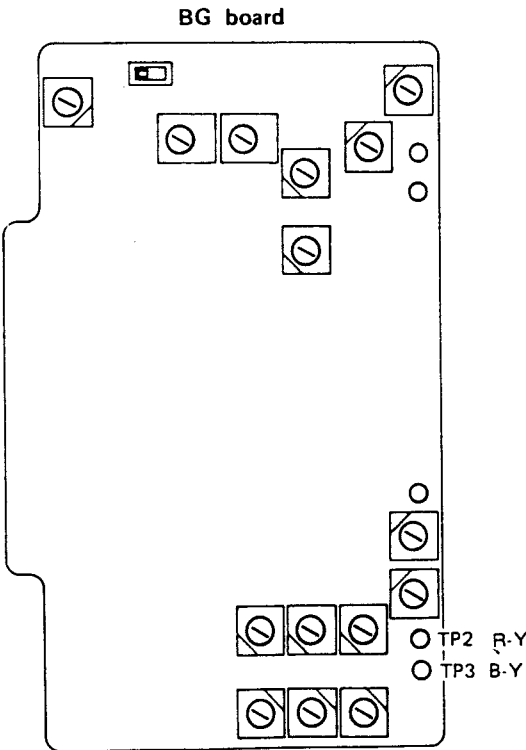
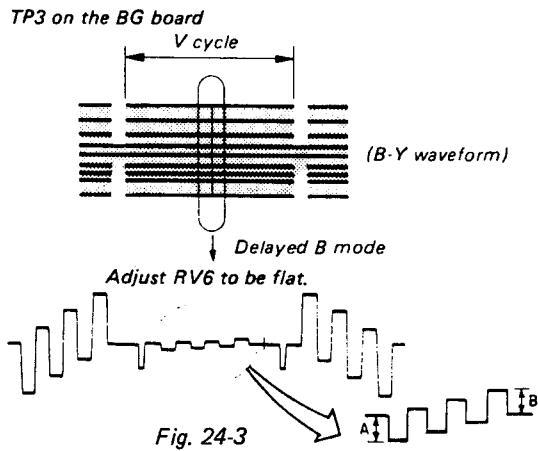
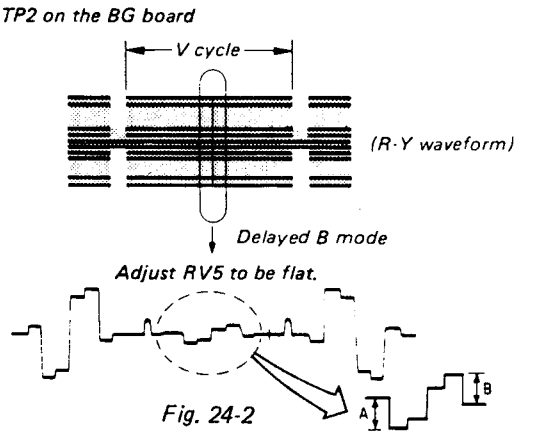
Fig. 23-3



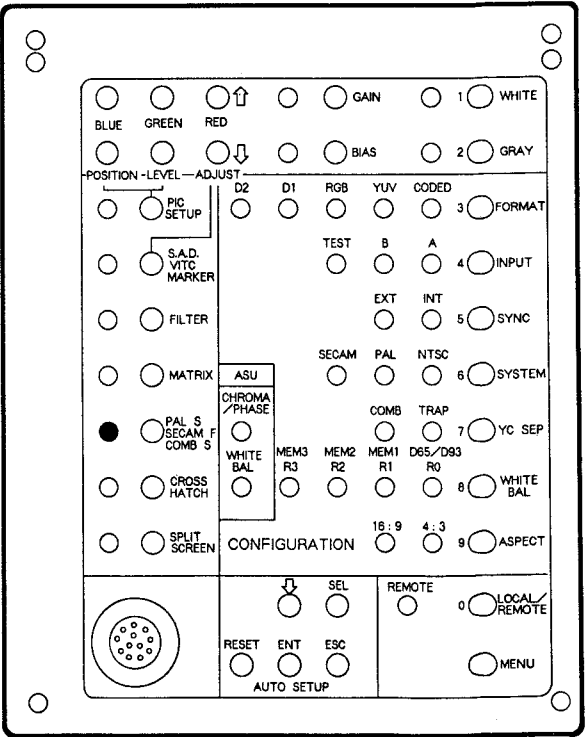
24. BD BOARD (PAL) PAL-D GAIN AND CCD BIAS
ADJUSTMANT (BVM-1411P ONLY)



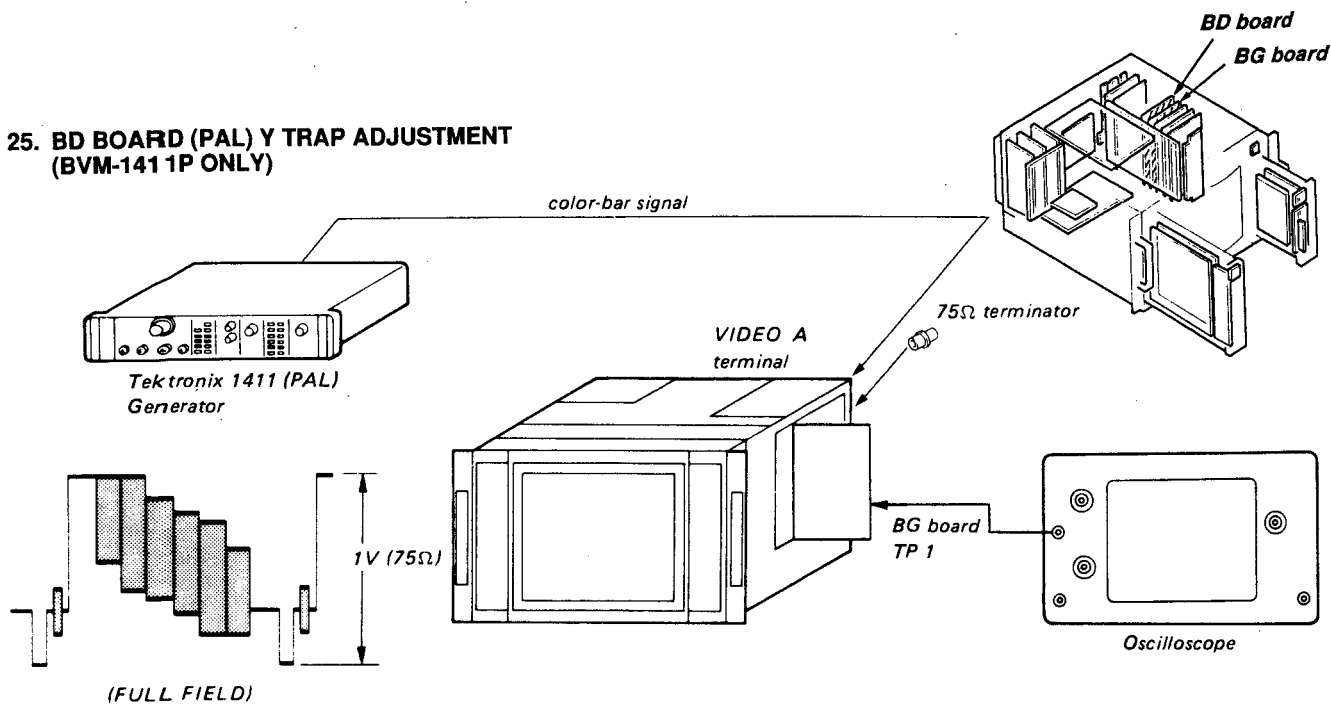
- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... OFF
1. Complete the connection as shown in Fig. 24-1. Turn on the power of this monitor. Set the INPUT switch to the 1 position, and the SYNC switch to the INT position.
 2. Connect the oscilloscope probe to TP2 on the BG board.
 3. Turn RV5 and RV6 on the BD board fully clockwise.
 4. By observing the waveform shown in Fig. 24-2, adjust RV9 on the BD board so that it becomes A=B.
 5. Adjust RV5 on the BD board so that the waveform shown in Fig. 24-2 becomes flat.
 6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 24-3.
 7. Adjust RV10 on the BD board so that the waveform of the oscilloscope becomes A=B.
 8. Adjust RV6 on the BD board so that the waveform shown in Fig. 24-3 becomes flat.



SUB CONTROL PANEL (HY board)



25. BD BOARD (PAL) Y TRAP ADJUSTMENT (BVM-141 1P ONLY)



1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BD board so that 4.43 MHz (PAL) subcarrier is minimum as shown in Fig. 25-1.

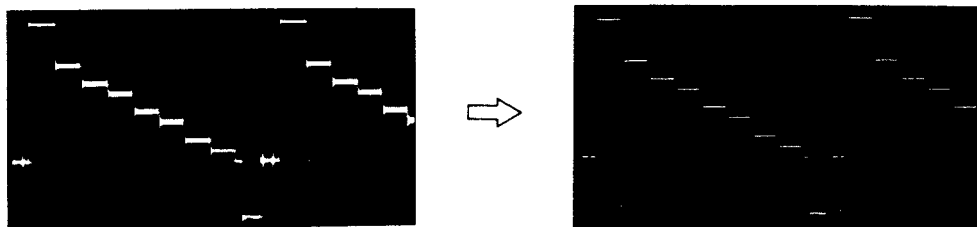
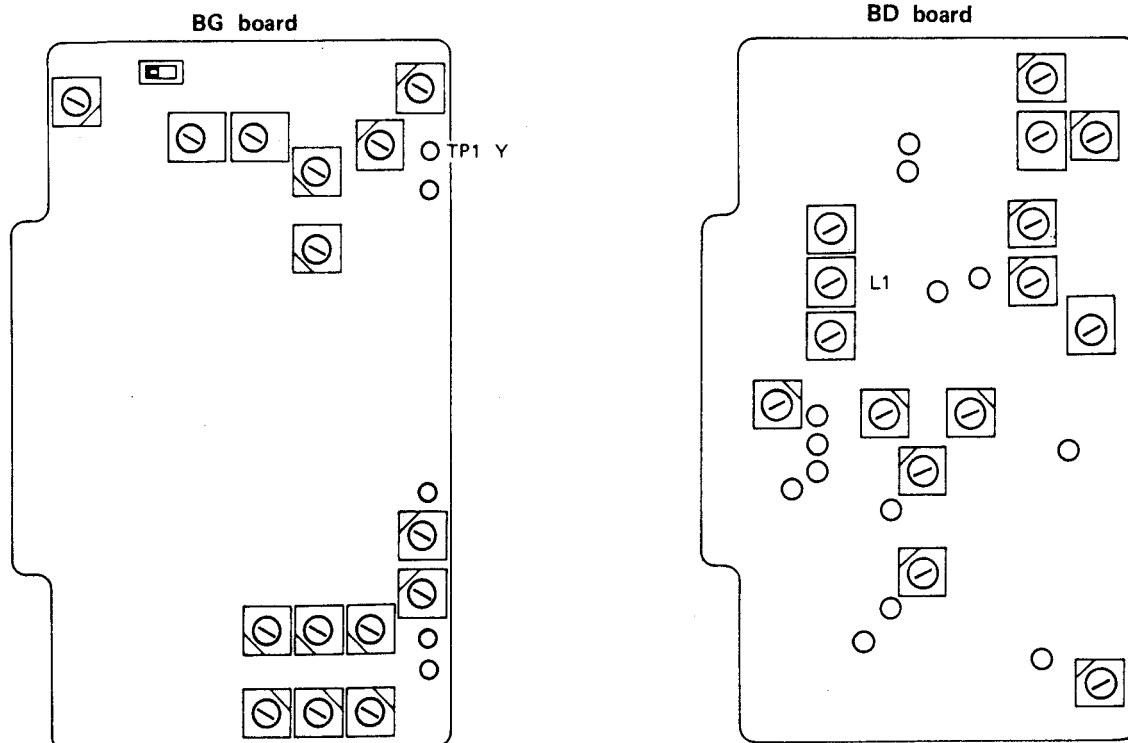
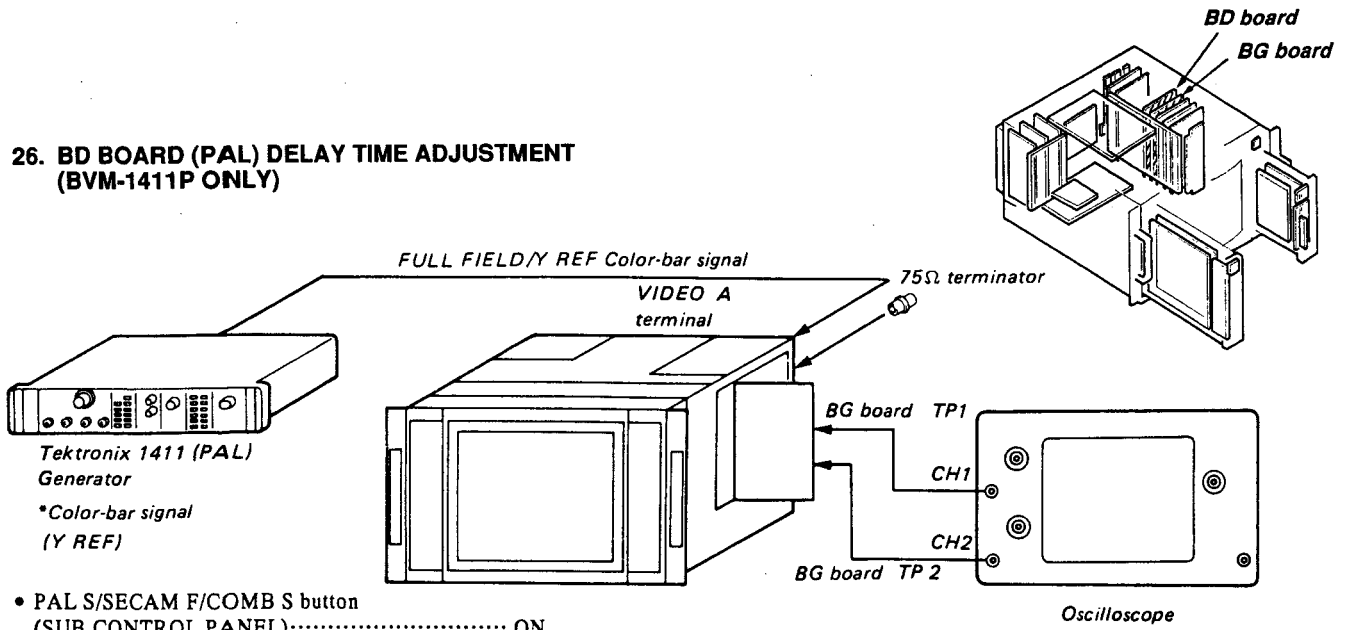


Fig. 25-1



26. BD BOARD (PAL) DELAY TIME ADJUSTMENT (BVM-1411P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
- 1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
- 3. Adjust RV1 of BD or BM board so that the output waveform as shown in Fig. 26-1.

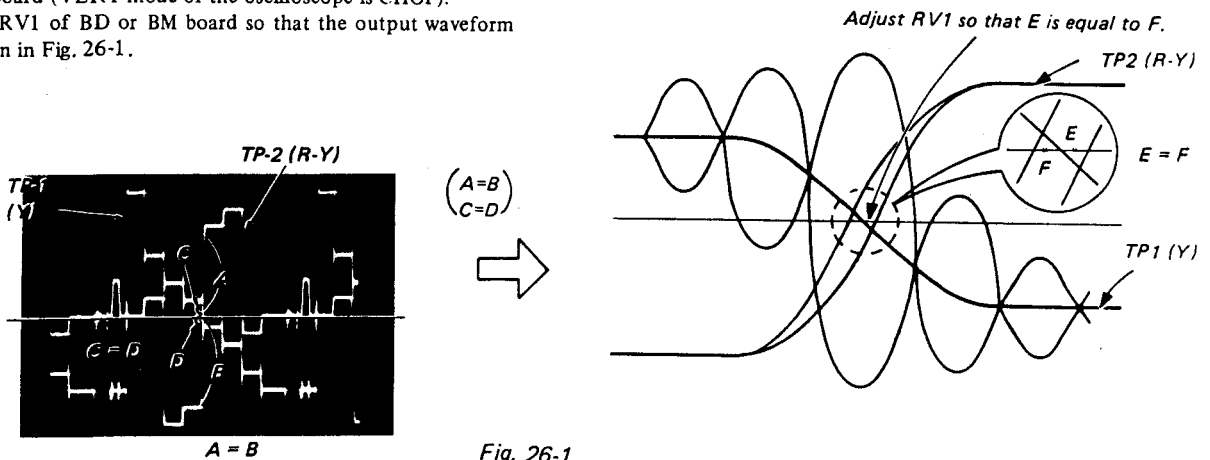
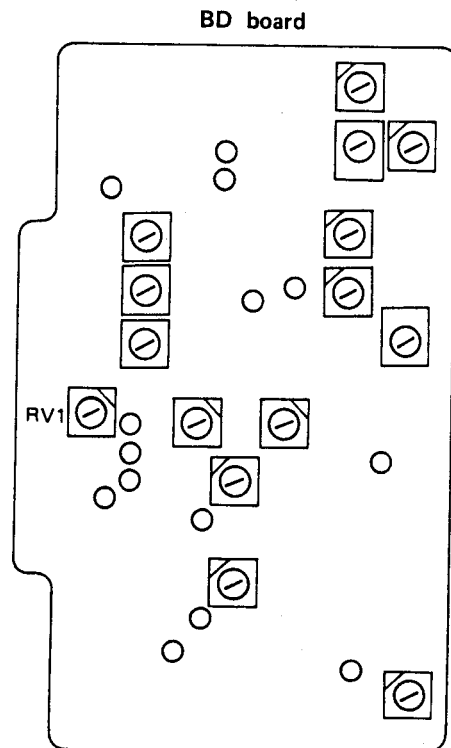
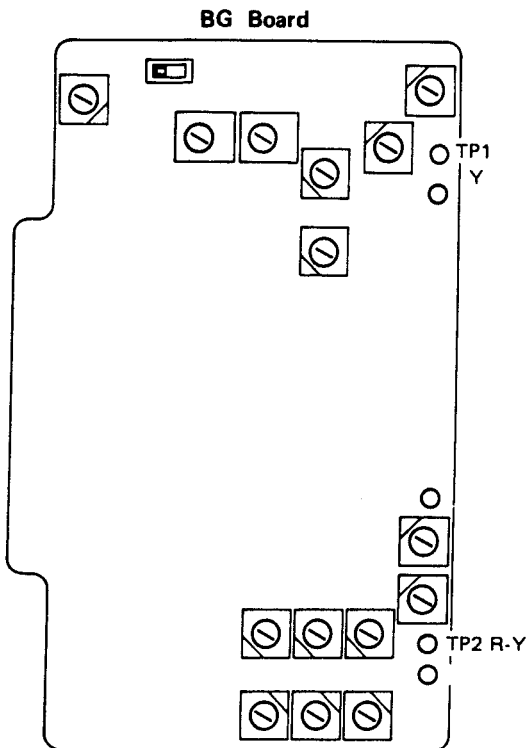
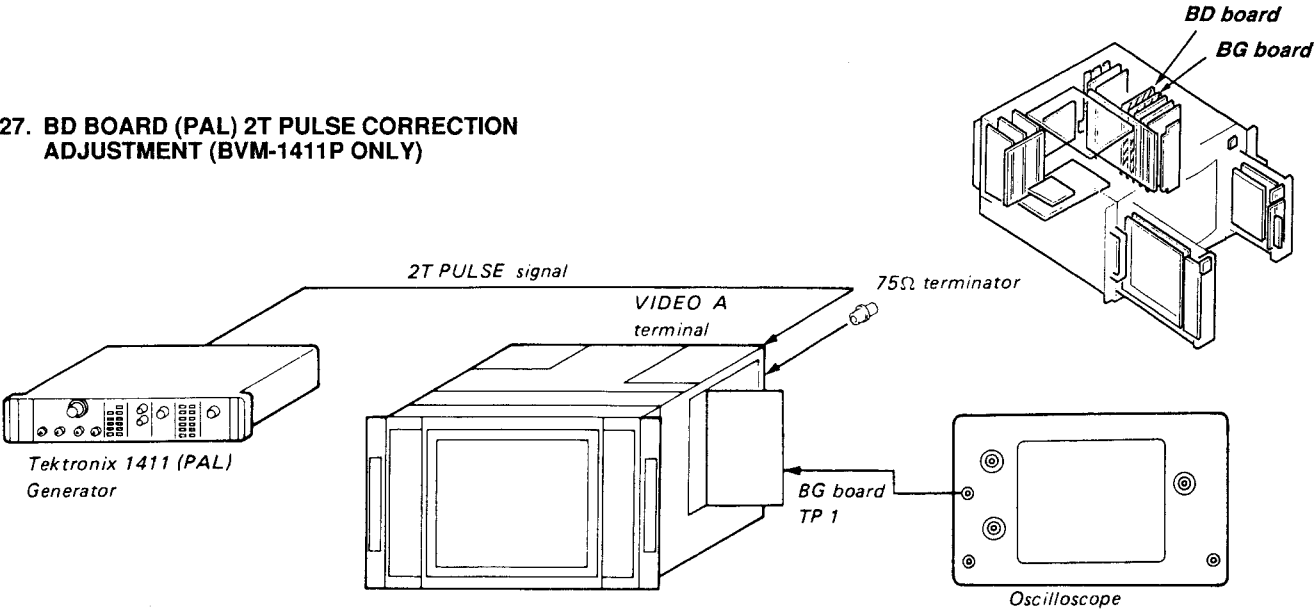


Fig. 26-1



27. BD BOARD (PAL) 2T PULSE CORRECTION
ADJUSTMENT (BVM-1411P ONLY)



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD board so that A is equal to B as shown in Fig. 27-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 27-1.

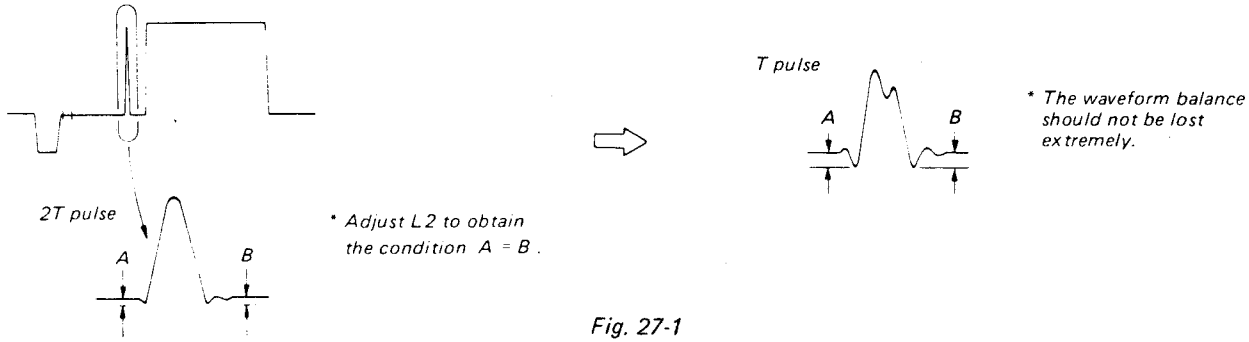
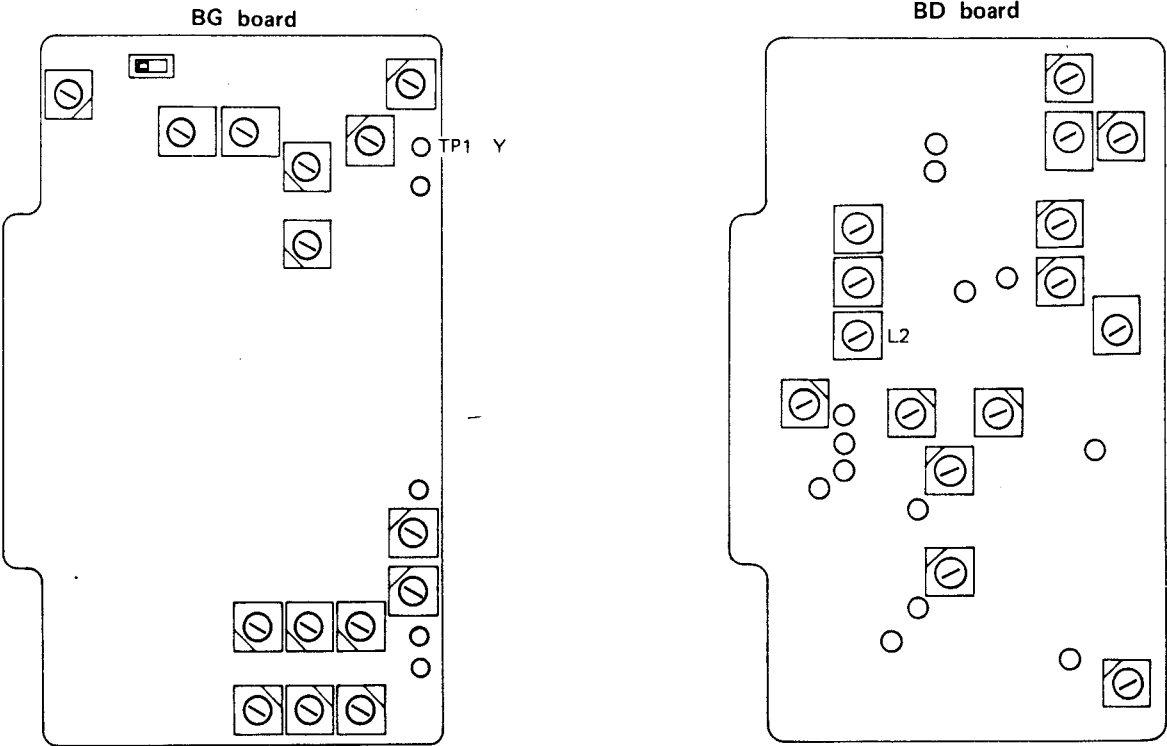
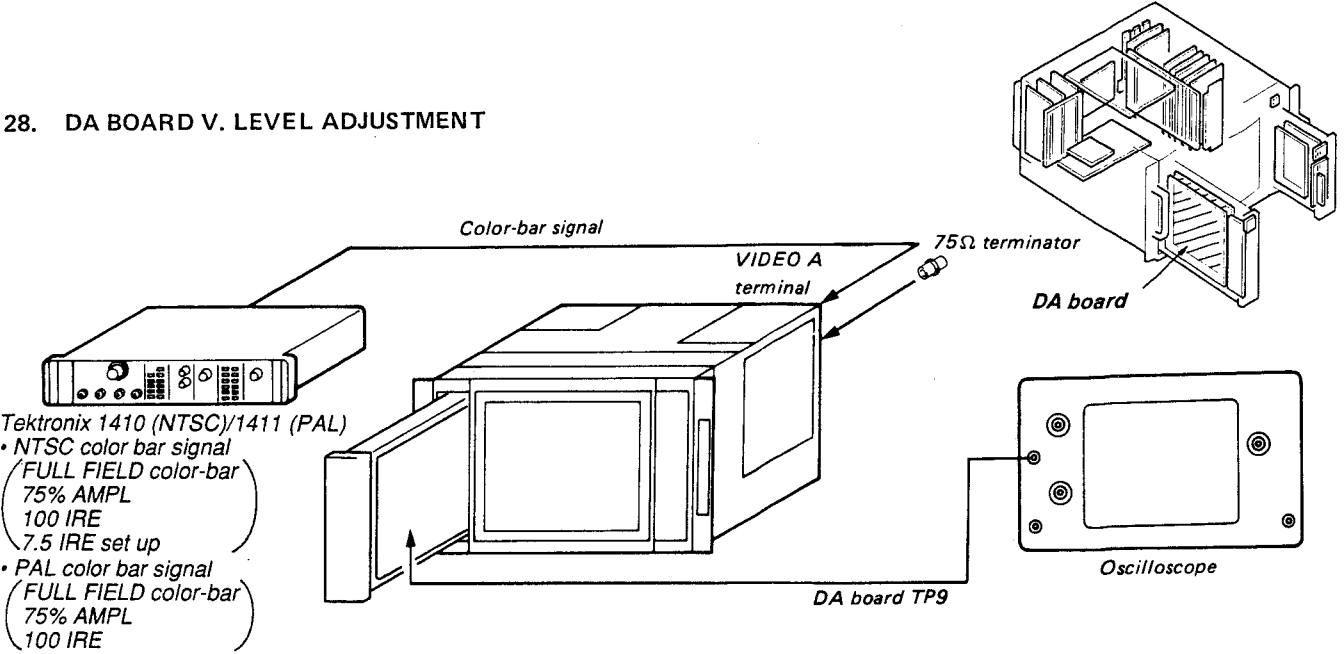


Fig. 27-1



28. DA BOARD V. LEVEL ADJUSTMENT



PAL

1. Input color-bar (TEK-1411) signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP9 on the DA board.
3. Adjust RV18 on the DA board so that output waveform is 12.0Vp-p as shown in Fig. 28-1.

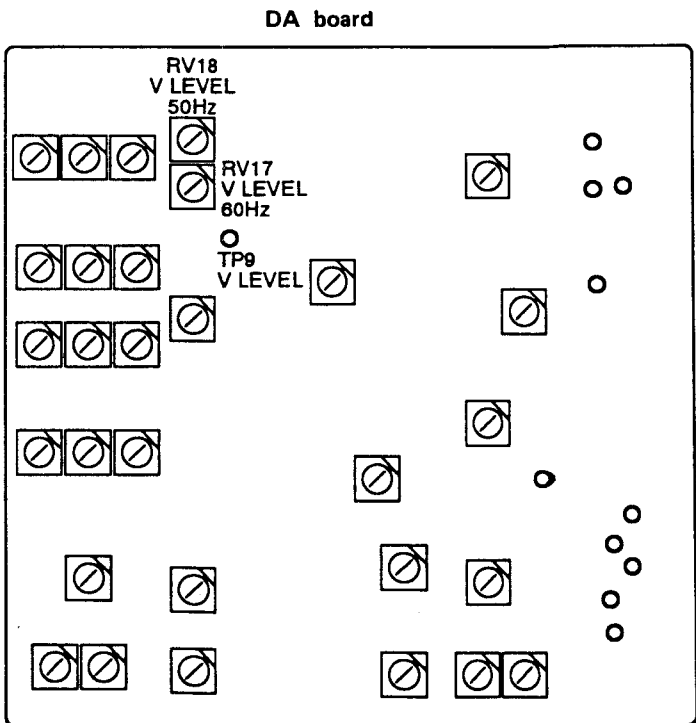


Fig. 28-1

The following adjustment is required when a NTSC system signal is received.

NTSC

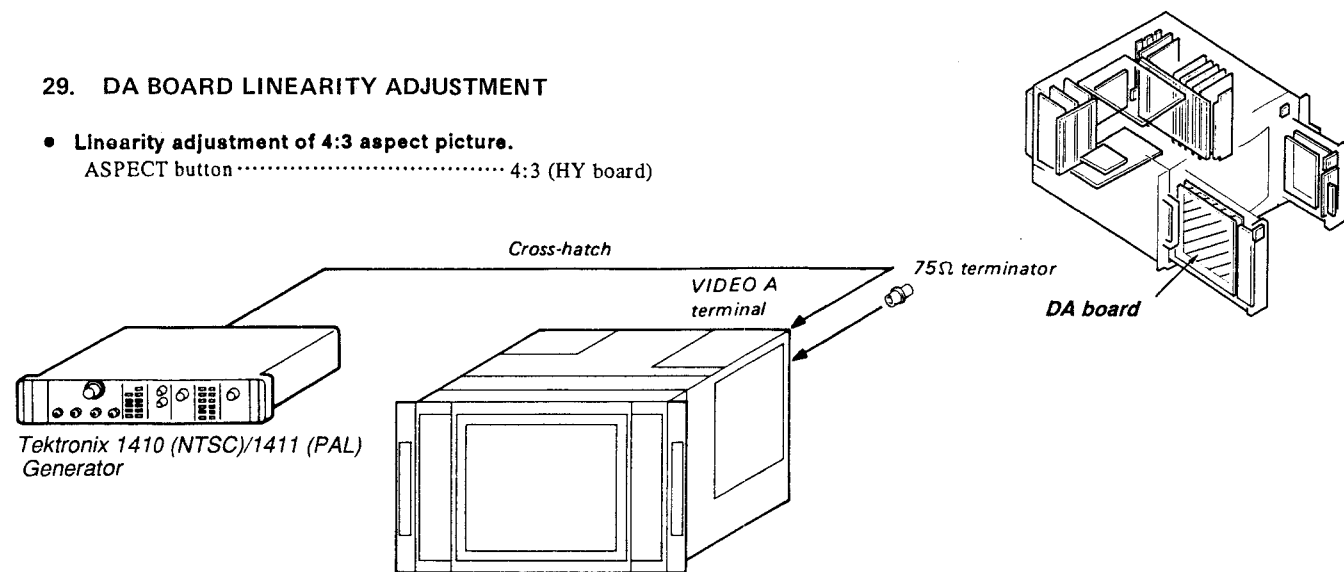
4. Input color-bar signal (TEK-1410) to the VIDEO A terminal of the set.
5. Connect an oscilloscope to the TP9 on the DA board.
6. Adjust RV17 on the DA board so that output waveform is 12.0Vp-p.



29. DA BOARD LINEARITY ADJUSTMENT

• Linearity adjustment of 4:3 aspect picture.

ASPECT button 4:3 (HY board)



TOP AND BOTTOM PIN ADJUSTMENT

1. Input a cross-hatch signal and with H-LINE only.
2. Adjust T&B pin distortion H PHASE by turning DA board RV27 (TRAPEZOID) as shown in Fig. 29-1.
3. Adjust T&B pin distortion gain by turning DA board RV13 as shown in Fig. 29-1.
4. Adjust T&B pin distortion vertical balance by turning DA board RV10 as shown in Fig. 29-1.
5. Adjust PARALLELOGRAM distortion by turning DA board RV28 (PARALLEL) as shown in Fig. 29-1.
6. Mark tracking by repeating 2 through 5.
7. UNDER SCAN switch (front panel (L)) UNDER ()
8. Adjust T&B distortion gain by turning DA board RV14.

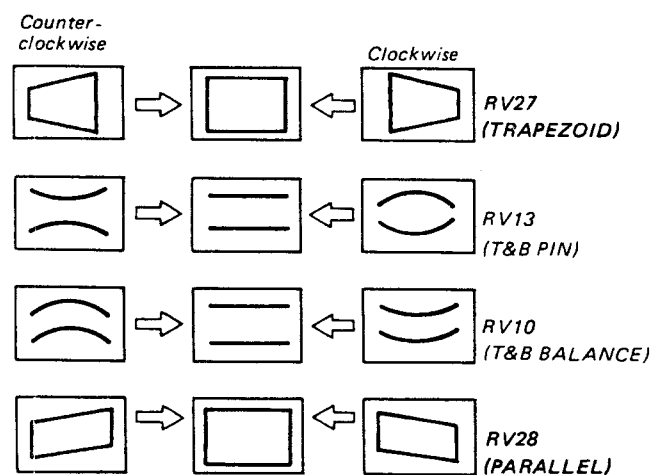
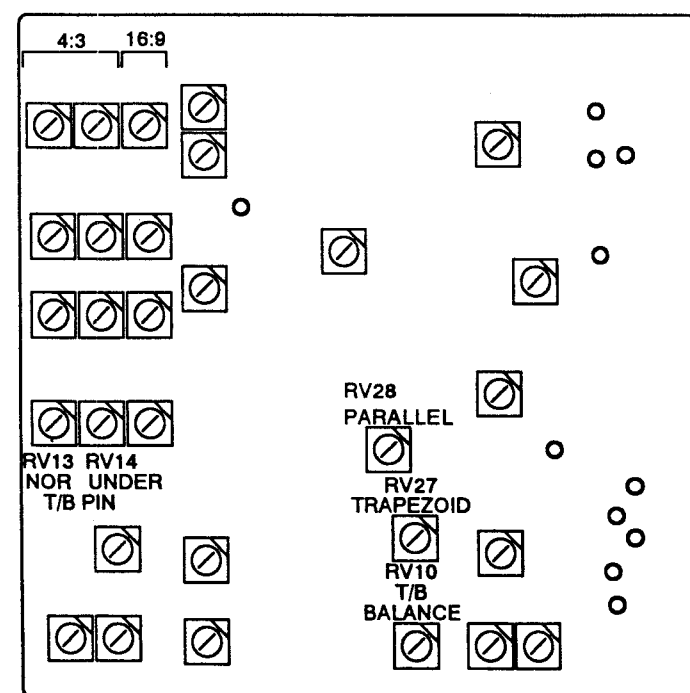


Fig. 29-1.

DA board



V. LINEARITY ADJUSTMENT

1. Input a cross-hatch signal and with H-LINE only.
2. Adjust V. CENTER by turning DA board RV21.
3. Adjust V. LIN BALANCE by turning DA board RV20 as shown in Fig. 29-2.
4. Adjust V. LIN GAIN by turning DA board RV22 as shown in Fig. 29-3.
5. Adjust V. HEIGHT by turning DA board RV23.
6. UNDER SCAN switch (front panel (L)) UNDER ()
7. Adjust V. HEIGHT by turning DA board RV24.
8. Mark tracking by repeating steps 2. through 5.

RV20. V LIN BALANCE

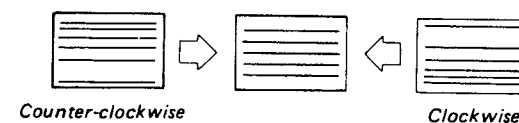


Fig. 29-2

RV22. V LIN GAIN

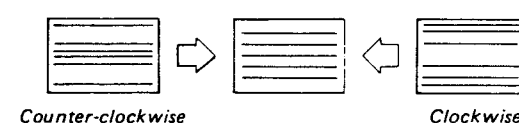


Fig. 29-3

SIDE PIN ADJUSTMENT

1. Input a cross-hatch signal and with V. LINE only.
2. Adjust SIDE PIN by turning DA board RV15 as shown in Fig. 29-4.
3. Adjust SIDE PIN TILT by turning DA board RV19 as shown in Fig. 29-5.
4. Adjust H. CENTER LINE by turning DA board RV25 as shown in Fig. 29-6.

RV15 (SIDE PIN)

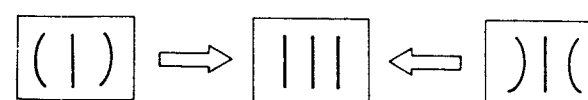


Fig. 29-4

RV19 (SIDE PIN TILT)

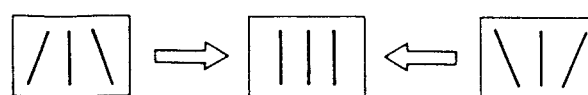


Fig. 29-5

RV25 (H. CENTER LINE)



Fig. 29-6

5. UNDER SCAN switch (Front panel (L)) UNDER ()
6. Adjust SIDE PIN by turning DA board RV16.

H. LINEARITY ADJUSTMENT

1. Input a cross-hatch signal and with V-LINE only.
2. Adjust H. LINEARITY by turning DA board RV6 (H LIN GAIN) as shown in Fig. 29-7.

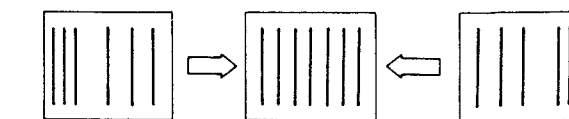
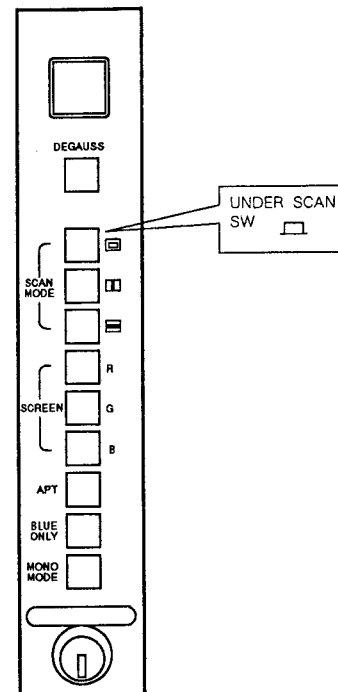
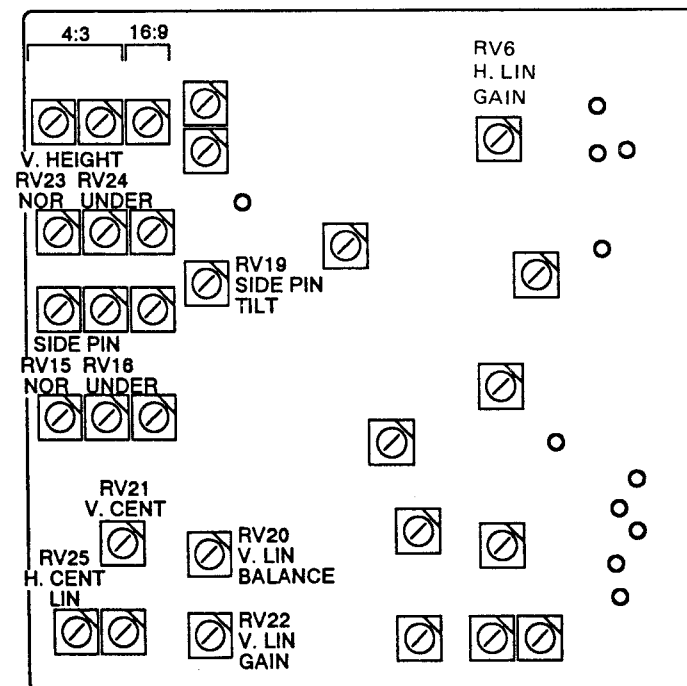


Fig. 29-7

FRONT PANEL(L)



DA board

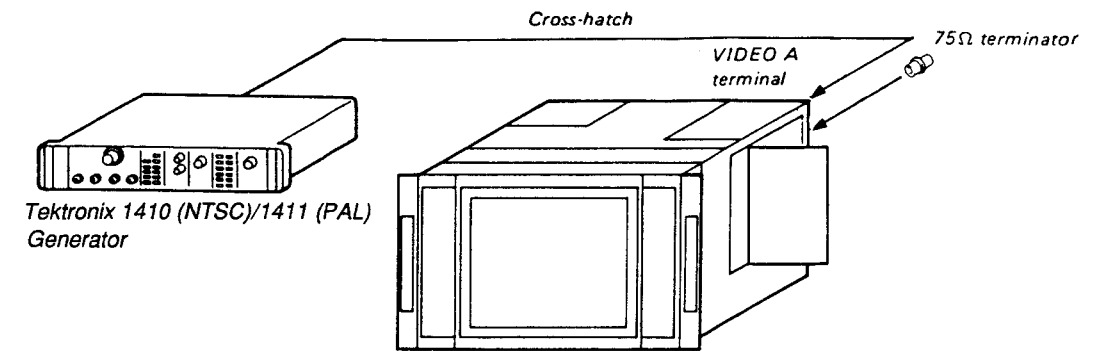
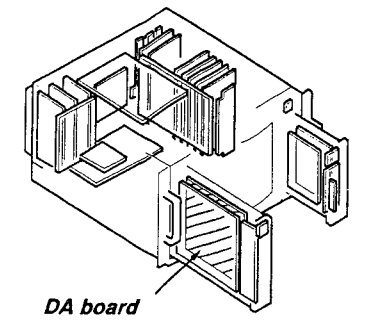


• Linearity adjustment of 16:9 aspect picture.

ASPECT button 16:9 (HY board)

NOTE:

- Adjust the convergence of the 16:9 aspect picture after convergence adjustment of the 4:3 aspect picture is completed.



TOP AND BOTTOM PIN ADJUSTMENT

1. Input a cross-hatch signal and with H-LINE only.
2. Adjust T&B pin distortion gain by turning DA board RV30 as shown in Fig. 29-8.

Counter clockwise

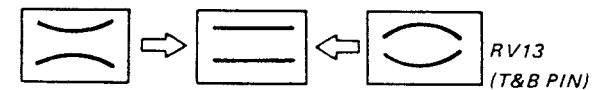


Fig. 29-8

H. LINEARITY ADJUSTMENT

1. Input a cross-hatch signal and with V-LINE only.
2. Adjust H. WIDTH by turning DA board RV29 as shown in Fig. 29-11.

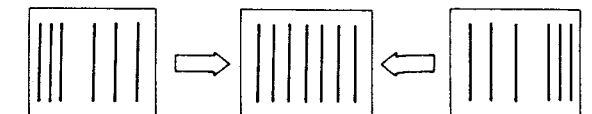


Fig. 29-11

V. LINEARITY ADJUSTMENT

1. Input a cross-hatch signal and with H-LINE only.
2. Adjust V. HEIGHT by turning DA board RV32 as shown in Fig. 29-9.

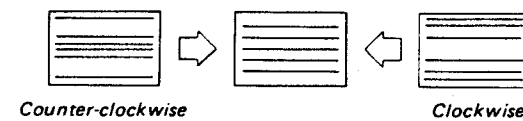


Fig. 29-9

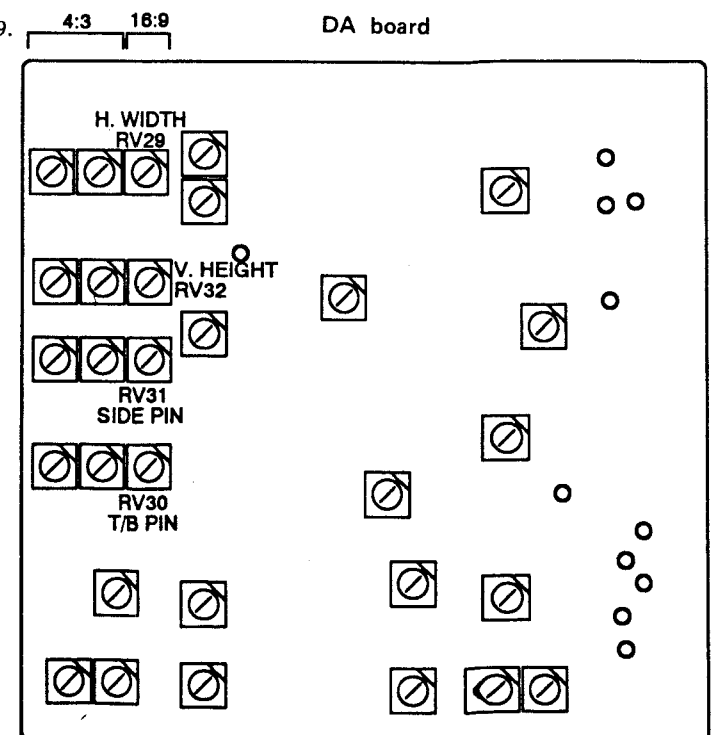
SIDE PIN ADJUSTMENT

1. Input a cross-hatch signal and with V. LINE only.
2. Adjust SIDE PIN by turning DA board RV31 as shown in Fig. 29-10.

RV15 (SIDE PIN)

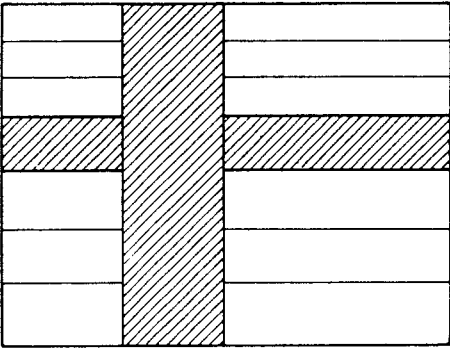


Fig. 29-10



30. H. FREQ ADJUSTMENT

- 1. Input a cross-hatch signal, and SYNC selector to EXT (EXT.)
- 2. Adjust until the picture stops drifting or moves slowly by turning DA board RV5 as shown in Fig. 30-1.



* Adjust so that the picture either stops drifting or moves slowly.

Fig. 30-1

31. DA BOARD H. CENTER, BLK, H.PHASE ADJUSTMENT

- 1. Input a monoscope signal, and UNDER SCAN switch to UNDER (UNDER).
- 2. Picture tube
 - V. DELAY switch IN (IN)
- 3. Adjust RV1 and RV7 on the DA board so that the raster can all be seen by RV1 and RV7 as shown in Fig. 31-1.

H. CENTER

- 4. Adjust RV26 on the DA board so that the out side portions of the raster become equal to at the right and the left sides as shown in Fig. 31-1.

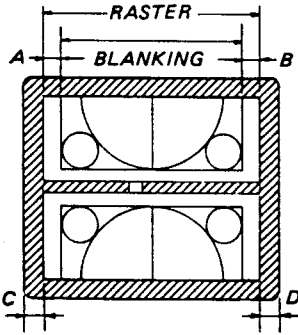


Fig. 31-1

H. BLK Adjustment

- 5. Connect an oscilloscope to the TP1 on the DA board.
- 6. Adjust RV1 on the DA board so that the H. BLK pulse width is 9.8μs. Fig. 31-2.

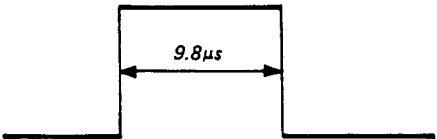
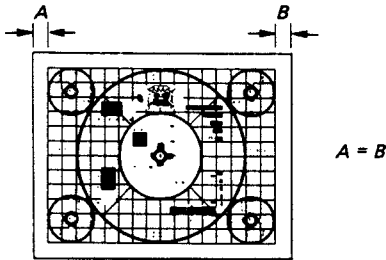


Fig. 31-2

H. BLK PHASE Adjustment

- 7. Adjust RV7 on the DA board so that the blanking width at the right and the left sides are equal to as shown in Fig. 31-3.

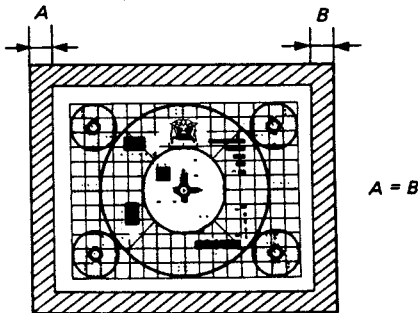


monoscope pattern

Fig. 31-3

H. PHASE Adjustment

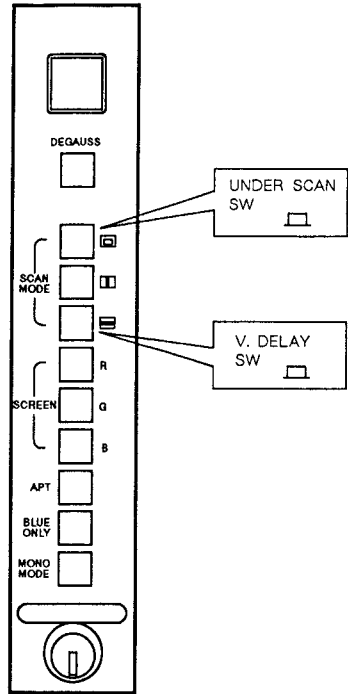
- 8. Adjust RV4 on the DA board so that the outside raster portions of the picture become equal at the right and the left sides as shown in Fig. 31-4.



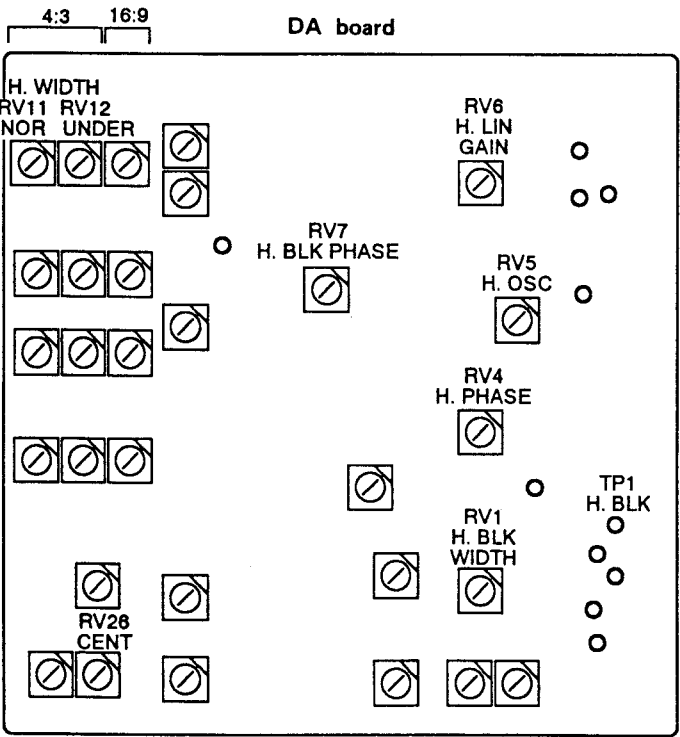
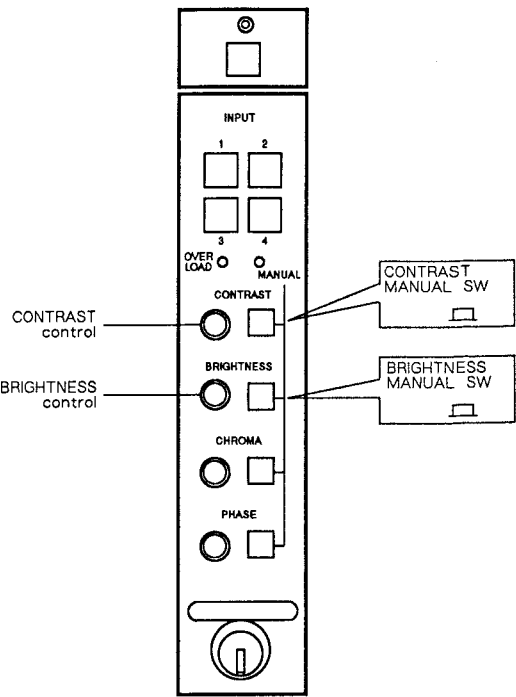
monoscope pattern

Fig. 31-4

FRONT PANEL(L)



FRONT PANEL(R)



32. DA BOARD H DELAY POSITION ADJUSTMENT

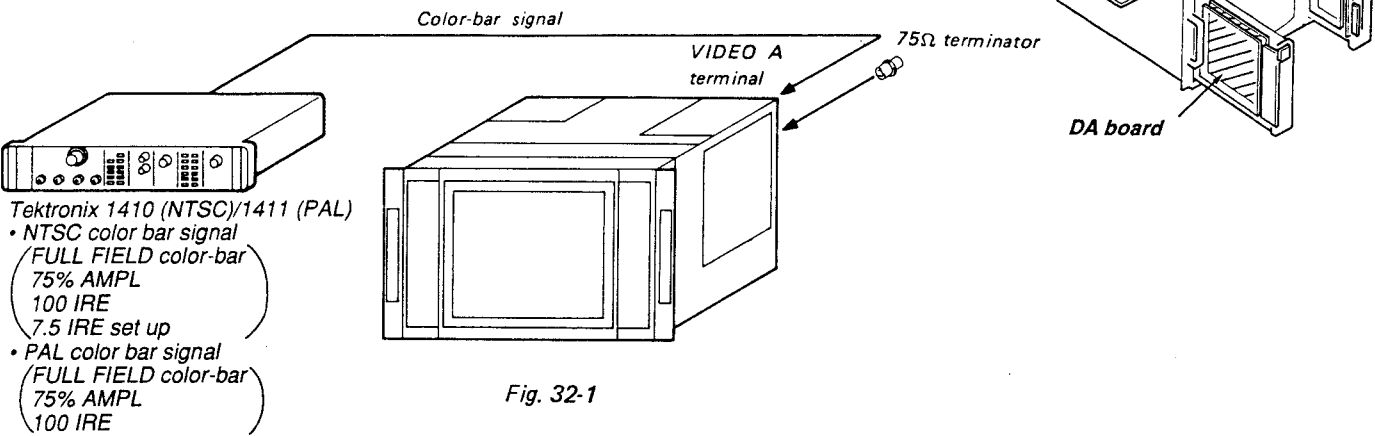
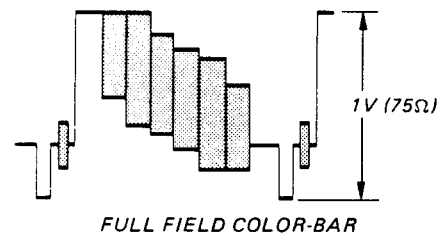


Fig. 32-1



- H. DELAY PULSE WIDTH ADJUSTMENT**
1. Connect an oscilloscope to the TP2 on the DA board.
 2. Adjust RV3 on the DA board so that PULSE width is equal when switching H-DELAY switch IN and OUT.
- H. DELAY POSITION**
1. Connect as shown in Fig. 32-1.
 2. Turn the INPUT selector to "1" () SYNC button "INT" and, H DELAY & V DELAY SW to "IN" () (pulse close position).
 3. Adjust the H-DELAY position as shown in Fig. 32-2 by turning DA Board RV2.

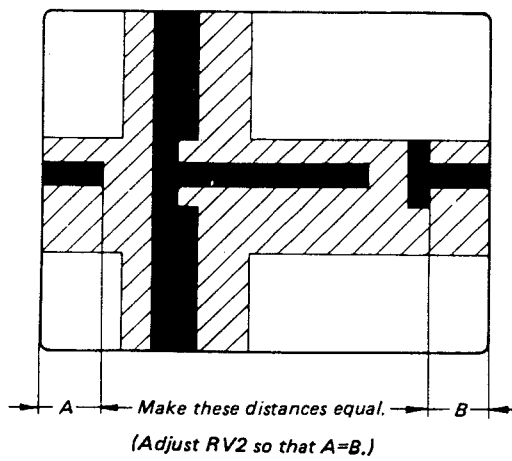
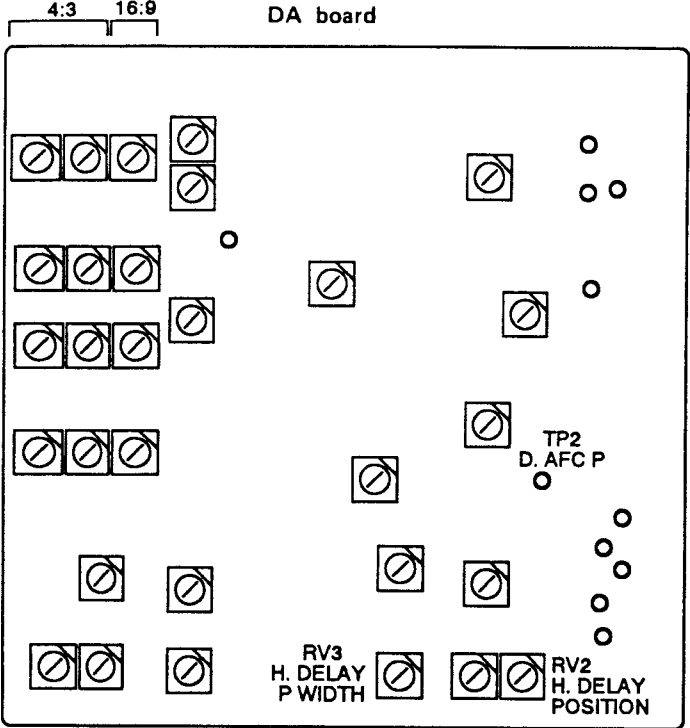
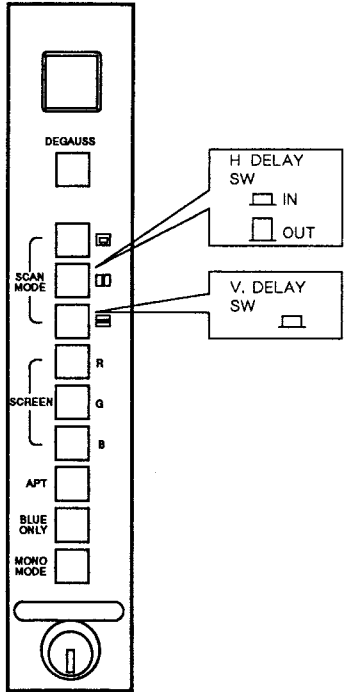


Fig. 32-2



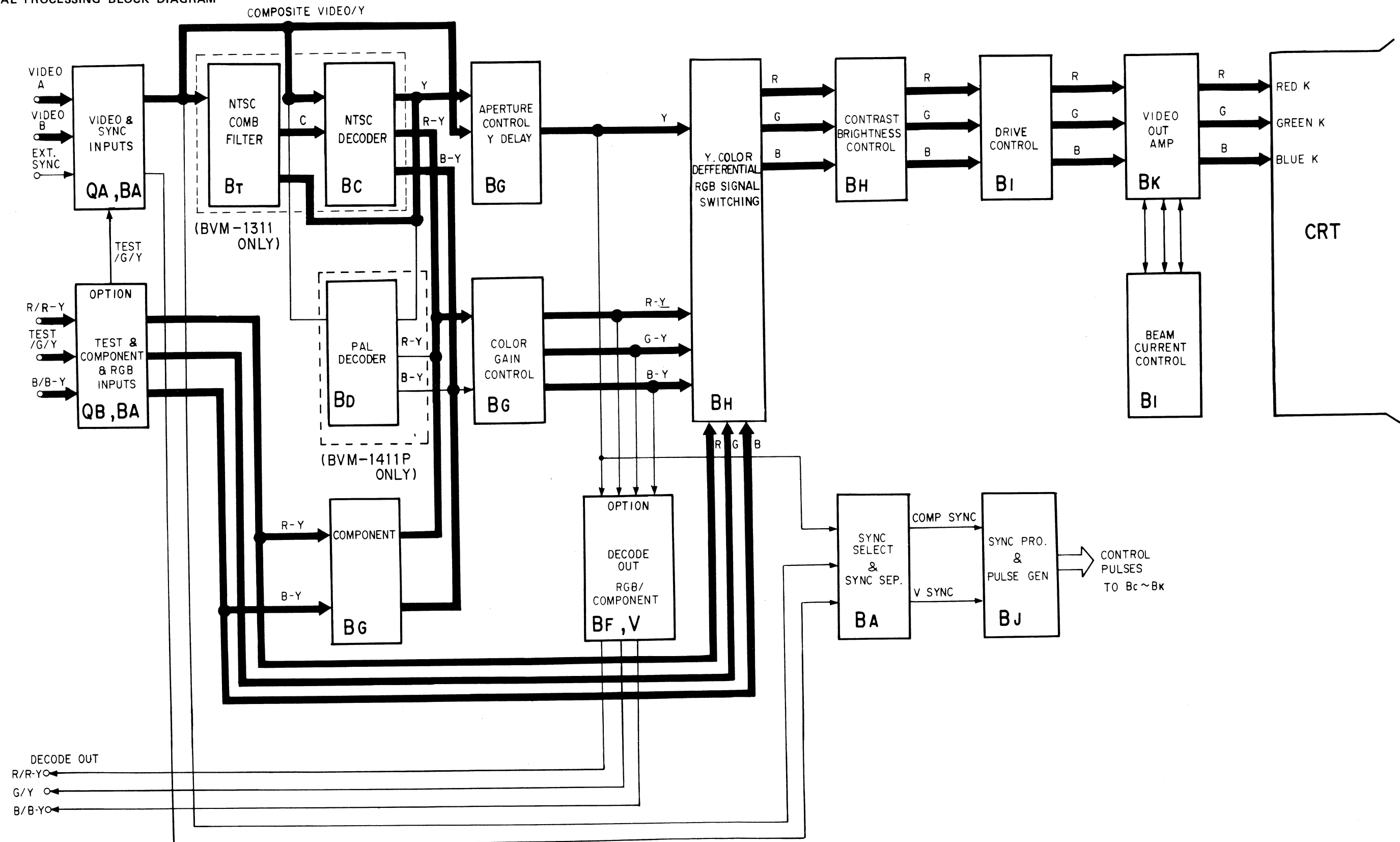
FRONT PANEL(L)



BLOCK DIAGRAM BLOCK DIAGRAM

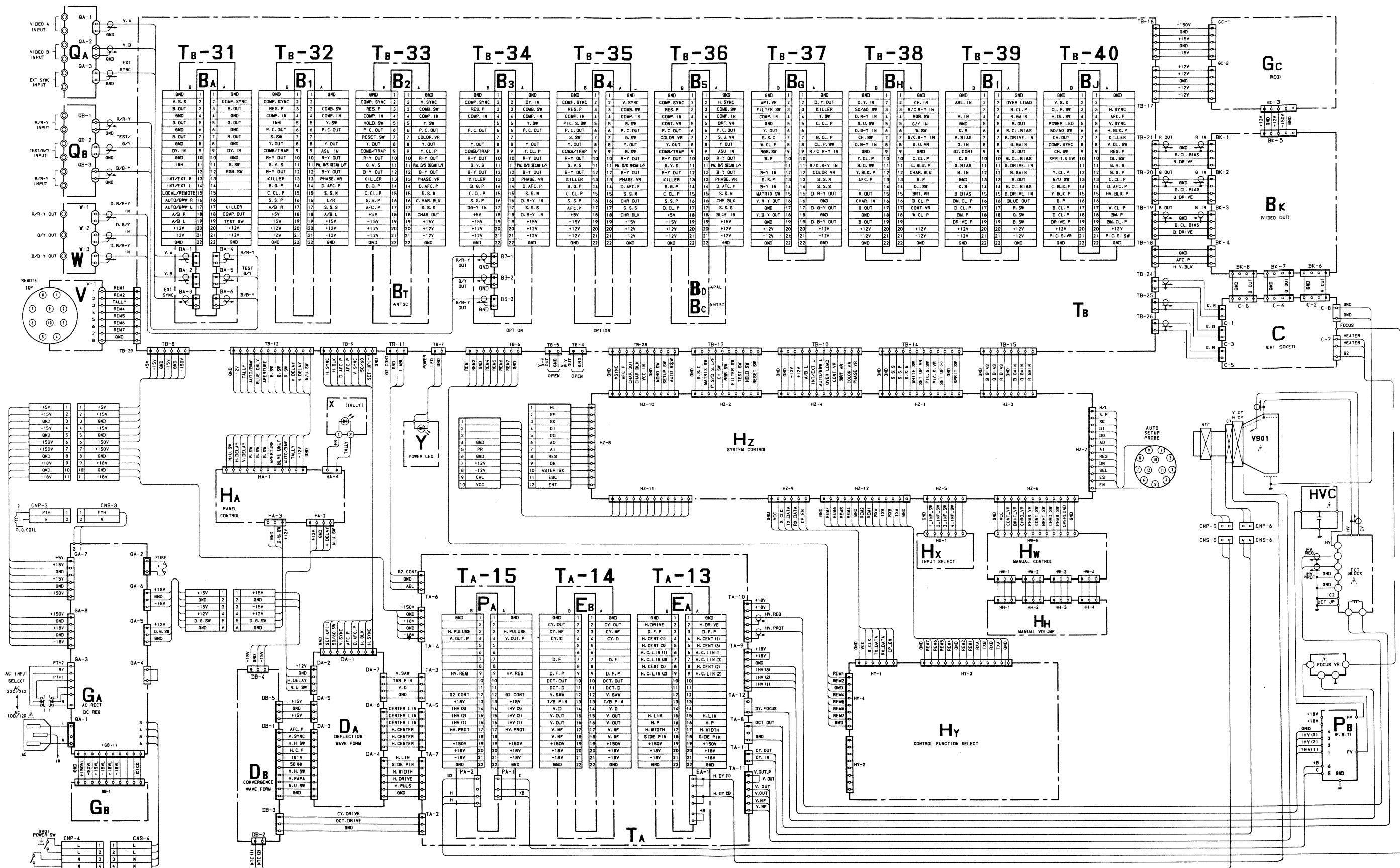
SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM



FRAME FRAME

5-2. FRAME WIRING DIAGRAM



5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

- All capacitors are in μF unless otherwise noted. p : μF 50 WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/2W on the C board, 1/10W on the BT, HY, and HZ boards and 1/4W on the rest of the boards unless otherwise specified. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$
-  : nonflammable resistor.
- Δ : internal component.
-  : direct connection to points marked  on the chassis
-  : panel designation.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used. When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved.

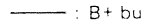
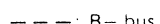
Refer to R52, R53, R67, R68, R124, R126, R222, R227, R228 and R239.
Adjust on page 4-13 ~ 4-18.

When replacing the part in below table, be sure to perform the related adjustment.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE WIREWOUND
COIL	: RB	NONFLAMMABLE CEMENT
	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: AIR	HIGH RIPPLE

Part replaced ()	Adjustment ()
C59, IC3, R67, R68, R78, RV2 . . . (GA board)	+B MAX (R67, R68) Page 4-13.
Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 . . . (GB board)	+B PROTECTOR (R52, R53) Page 4-13.
D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1 . . . (PA board) DCT BLOCK	HV REG (R124, R126) Page 4-18.
D205, D207, D214, D215, IC2, R201, R202, R213, R214, R225, R226, R227, R228, R229, R230, R243 (PA board) DCT BLOCK	HV HOLD DOWN (R227, R228) Page 4-16.
D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, R223, R224, R242 . . . (PA board) T1 (FBT), R1, R2 . . . (PB board)	BEAM CURRENT PROTECTOR-1 (R222) Page 4-17.
D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247 . . . (PA board) T1 (FBT), R3, R4 . . . (PB board)	BEAM CURRENT PROTECTOR-2 (R239) Page 4-18.

-  : adjustment for repair.
-  : B+ bus.
-  : B- bus.
- Circled numbers are waveform references.
- Waveforms are taken with a color-bar signal input and with a 75Ω terminator connected to an open terminal.

- Switches and controls are set as follows unless otherwise noted.

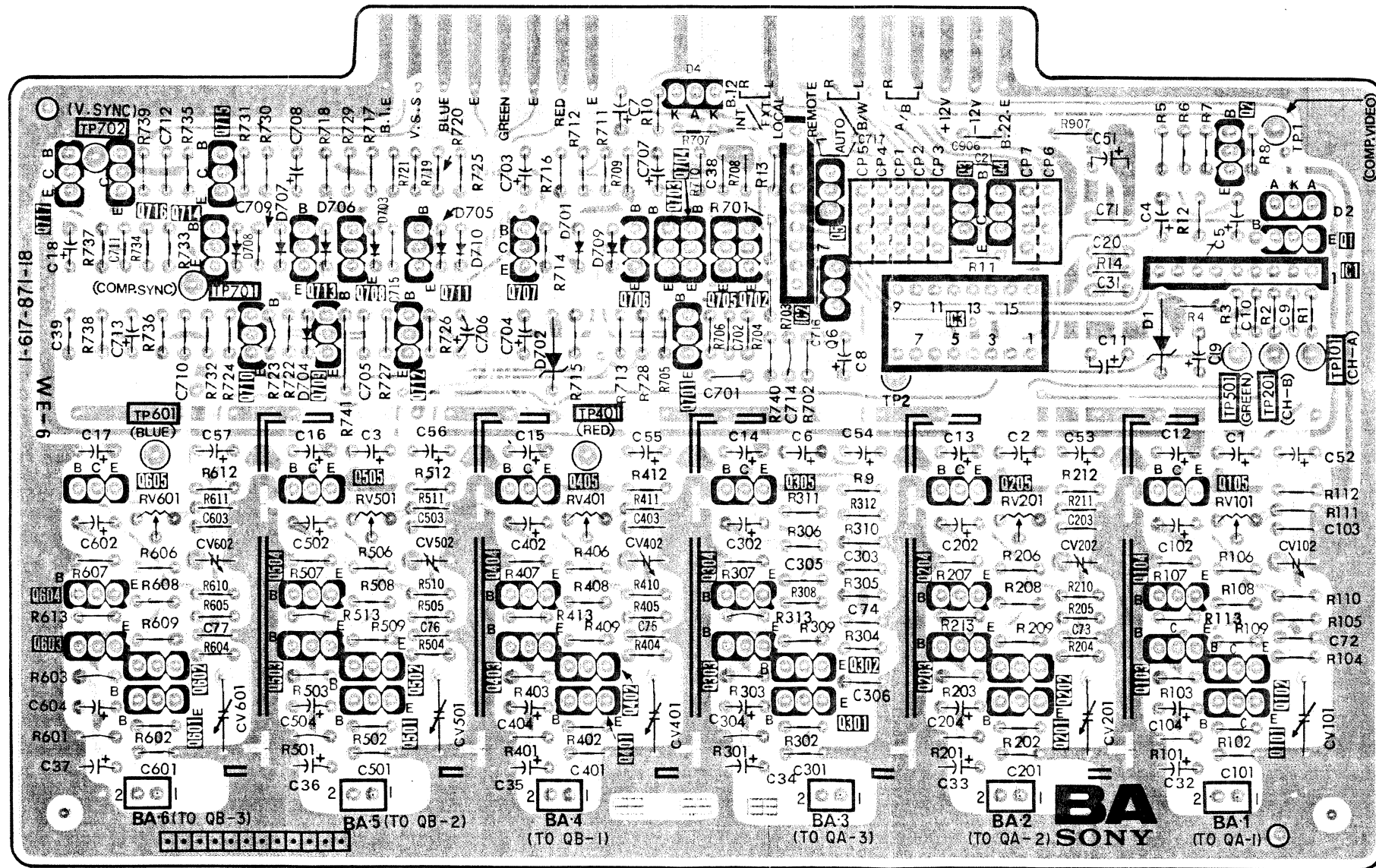
FRONT PANEL (R)	
• INPUT selector 1	HX board
• CONTRAST MANUAL switch PRESET	
• BRIGHTNESS MANUAL switch PRESET	HW board
• CHROMA MANUAL switch PRESET	
• PHASE MANUAL switch PRASET	
FRONT PANEL (L)	
• SCAN MODE switch	
 H. DELAY NOR	HA board
 V. DELAY NOR	
 UNDER SCAN NOR	
• SCREEN switch (R) NOR	
• SCREEN switch (G) NOR	
• SCREEN switch (B) NOR	
• APT switch NOR	
• BLUE ONLY switch NOR	
• MODE selector AUTO	
SUB CONTROL PANEL	
• FORMAT button CODED	HA board
• INPUT button A	
• SYNC button INT	
• COLOR SYSTEM button NTSC (BVM-1311)	
• YC SEP button PAL (BVM-1411P)	
• WHITE BALANCE button COMB (BVM-1311)	
• ASPECT button TRAP (BVM-1411P)	
• PIC SETUP button D65/D93	
• SAD/VITC/MARKER button 4 : 3	
• FILTER button OFF	
• MATRIX button OFF	
• PAL S/SECAM F/COMB S button OFF	
• CROSS HATCH button OFF	
• SPLIT SCREEN button OFF	
• WHITE button OFF	
• GRAY button OFF	
• AFC switch 2m set	DA board

Note:

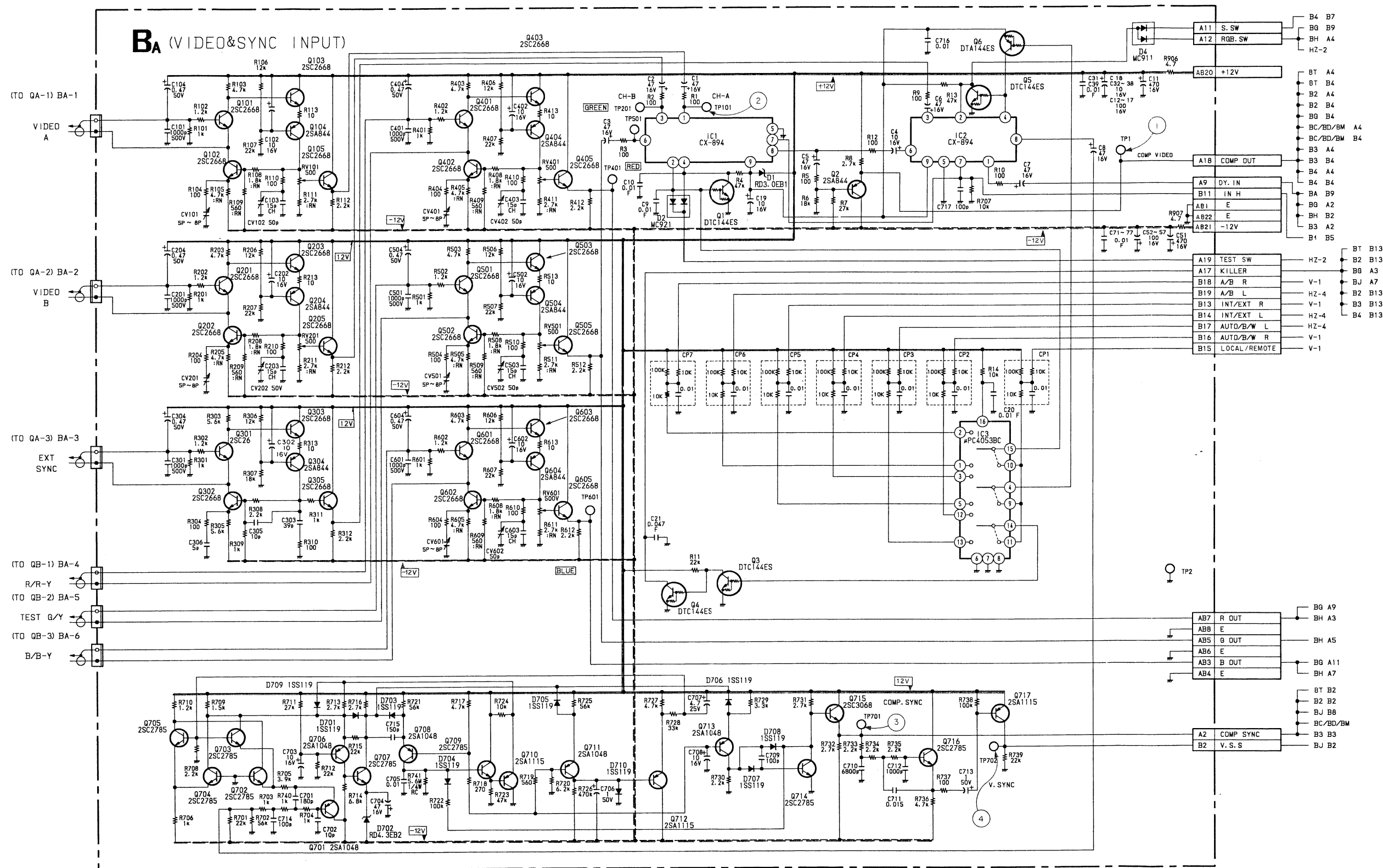
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BA board (SYNC SELECT & SYNC SEP, HOOK UP)

IC	2										3				1			
Q	717	716	715	713	708	711	707	706	704	703	702	5	6	3	4	2	1	
	605		714			712			701									
	604		710		709													
	603			505			405			305				205		105		
				504			404			304				204		104		
				503			403			303				203		103		
		602			502			402			302				202		102	
		601			501			401			301				201		101	
D	708 707 706 703 705 710										101	709	4					2
	704										702					1		
TP	TP702			TP701				TR401						TP2			TP1	
ADJ		TP601			RV501			RV401							RV201		TP501	
		RV601				CV502				CV402					CV202		TP201	
			CV602			CV501				CV401					CV201		TP101	
			CV601														CV102	
																	CV101	



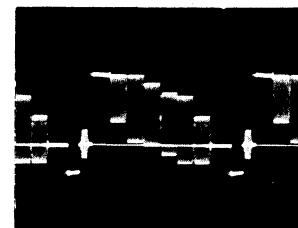
-  : Pattern from the side which enables seeing.
- : Pattern of the rear side.



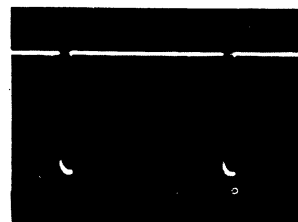
BA BOARD

IC1	CX894	INPUT SELECT
2	CX894	SYNC SELECT
3	MC14053BCP	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

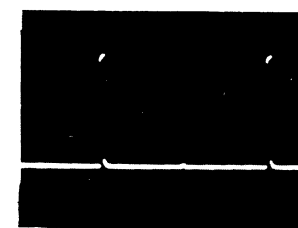
Q603	2SC2668	B-Y/B AMP
604	2SA844	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3.0E-B1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4.3E-B2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)
② 1Vp-p (H)



③ 12Vp-p (H)

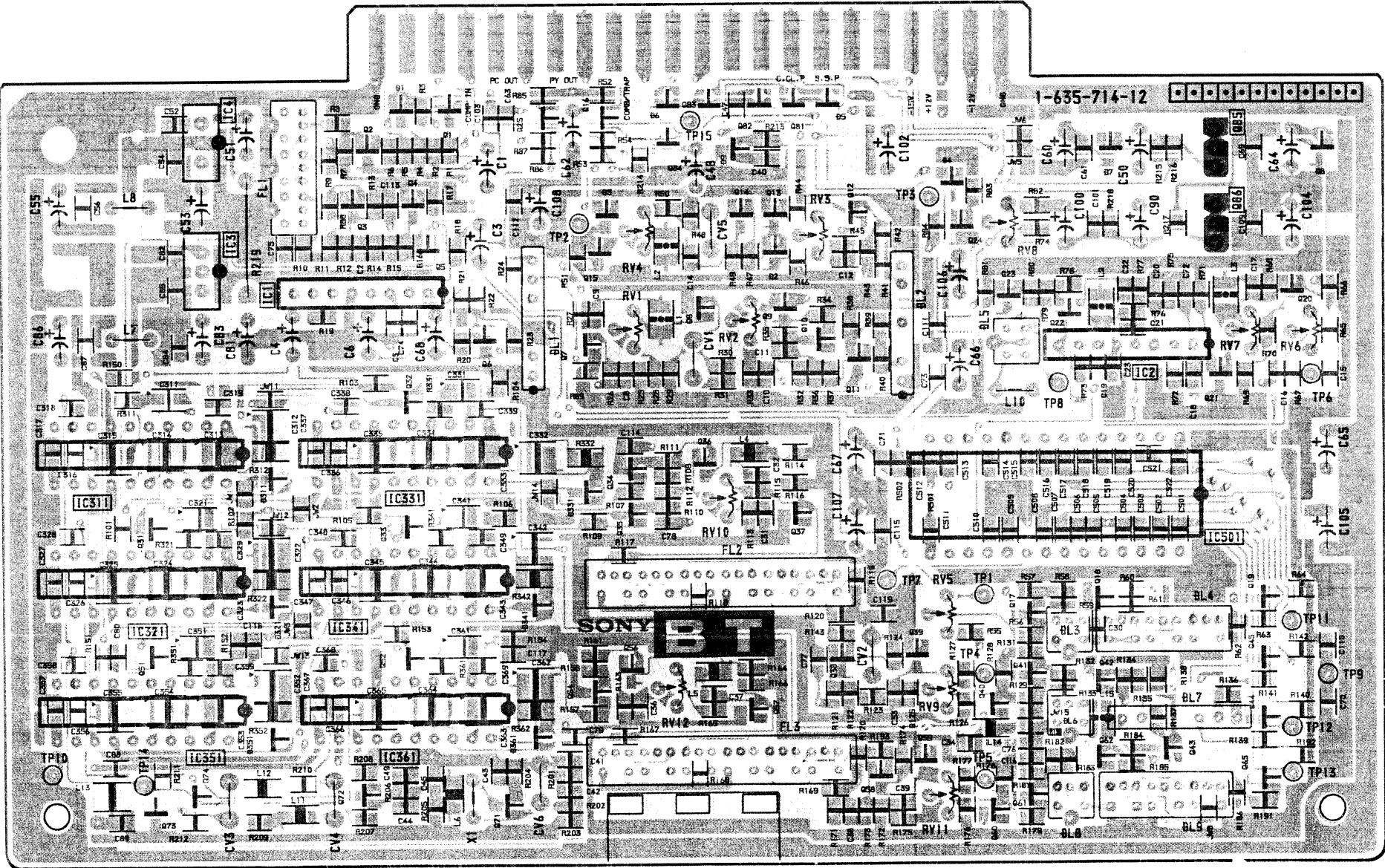


④ 12 Vp-p (V)

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF) (BVM-1311 ONLY)

IC	311	4	1	331	501	2
	321	3		341		
	351			361		
Q			2	1	83	82
			3	4	16	84
			5	6	8	14
			32	7	15	13
			33	15	34	12
			52	54	35	11
	31				36	9
	51				10	39
	73	74			37	59
			72		38	40
			71		57	60
					58	61
						62
						43
						65
D			311	321	1	8
			351			
ADJ						
TP	10	14				

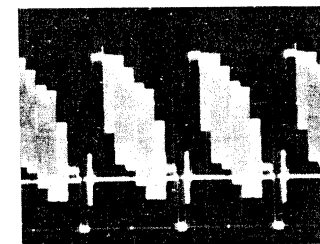
BT BOARD		
IC1	LA7816	Y SELECT
2	LA7816	C SELECT
3	NJM7809FA	9V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
361	CXL1009P	CCD
501	CXA1539P	CORRELATION
Q1	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUF
12	2SA1226	Y AMP & BUF
13	2SC2757	Y AMP & BUF
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SV
17	2SC1623	BPF 140 ns
18	2SA812	BPF 140 ns
19	2SC1623	BPF 140 ns
20	2SC2757	S COMB C LI
21	2SC1623	S COMB C LI
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SV
32	2SC1623	1H DELAY(N
33	2SC1623	1H DELAY(N
34	2SA812	1H DELAY(N
35	2SA812	1H DELAY(N
36	2SA1226	1H DELAY(N
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns
42	2SA812	BPF 140 ns
43	2SC1623	BPF 140 ns
44	2SC1623	BPF 140 ns
45	2SC1623	BPF 140 ns
52	2SC1623	1H DELAY(N
54	2SA812	1H DELAY(N
56	2SA1226	1H DELAY(N
57	2SC1623	AMP
58	2SA1226	AMP
59	2SC2757	AMP



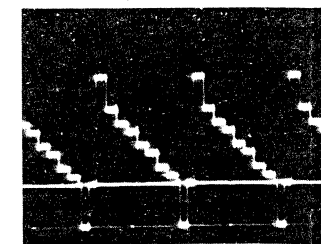
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

BT BOARD

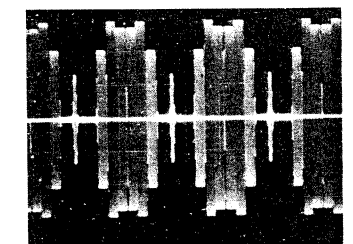
IC1	LA7816	Y SELECT	Q60	2SC1623	AMP
2	LA7816	C SELECT	61	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
3	NJM7809FA	9V REG	62	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
4	NJM7805FA	5V REG	65	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
331	CXL1009P	CCD	71	2SC2757	X'TAL OSC
341	CXL1009P	CCD	72	2SA1226	X'TAL OSC
361	CXL1009P	CCD	73	2SC2757	X'TAL OSC
501	CXA1539P	CORRELATION	74	2SA1226	X'TAL OSC
			81	DTA144EK	SW CONTROL
Q1	2SA812	BUFFER	82	DTC144EK	SW CONTROL
2	2SC1623	BUFFER	83	DTA144EK	SW CONTROL
3	2SA1226	AMP	84	DTA144EK	SW CONTROL
4	2SC2757	AMP	85	2SB734	SW CONTROL
5	2SC1623	AMP	86	2SD774	SW CONTROL
6	2SC1623	Y DELAY			
7	2SA1226	Y DELAY	D1	1S2835	SW
8	2SA812	Y DELAY	2	RD5.6MB2	DC SHIFT
9	2SA1226	Y/C MIX	3	1S2837	SW
10	2SC2757	Y/C MIX	4	1S2837	SW
11	2SC1623	Y AMP & BUFFER	5	1S2837	SW CONTROL
12	2SA1226	Y AMP & BUFFER	6	1S2835	SW CONTROL
13	2SC2757	Y AMP & BUFFER	7	1S2837	SW CONTROL
14	2SC2757	Y DELAY	8	1S2835	SW CONTROL
15	2SA812	Y DELAY	9	1S2835	SW CONTROL
16	2SC3624A	BUFFER & SW	331	1S2837	CLAMP
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)	341	1S2837	CLAMP
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)	361	1S2837	CLAMP
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)			
20	2SC2757	S COMB C LEVEL, PHASE			
21	2SC1623	S COMB C LEVEL, PHASE			
22	2SC1623	BPF, BUFFER			
23	2SC1623	BPF, BUFFER			
24	2SA812	BPF, BUFFER			
25	2SC3624A	BUFFER & SW			
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
37	2SC1623	AMP			
38	2SA1226	AMP			
39	2SC2757	AMP			
40	2SC1623	AMP			
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
56	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
57	2SC1623	AMP			
58	2SA1226	AMP			
59	2SC2757	AMP			



① 1.1 Vp-p(H)



② 0.95 Vp-p(H)

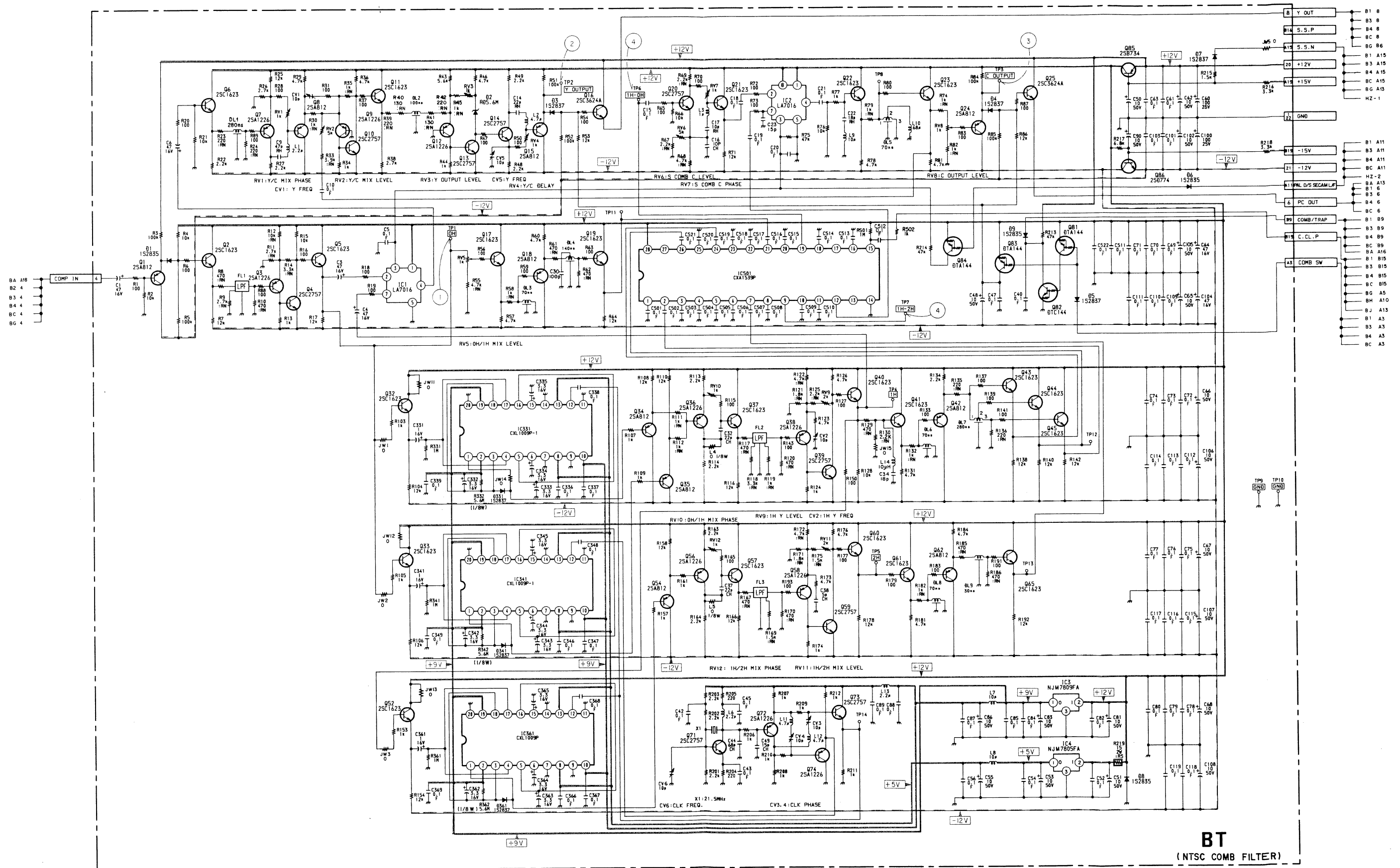


③ 0.58 Vp-p(H)

④ 1.9 Vp-p(H)

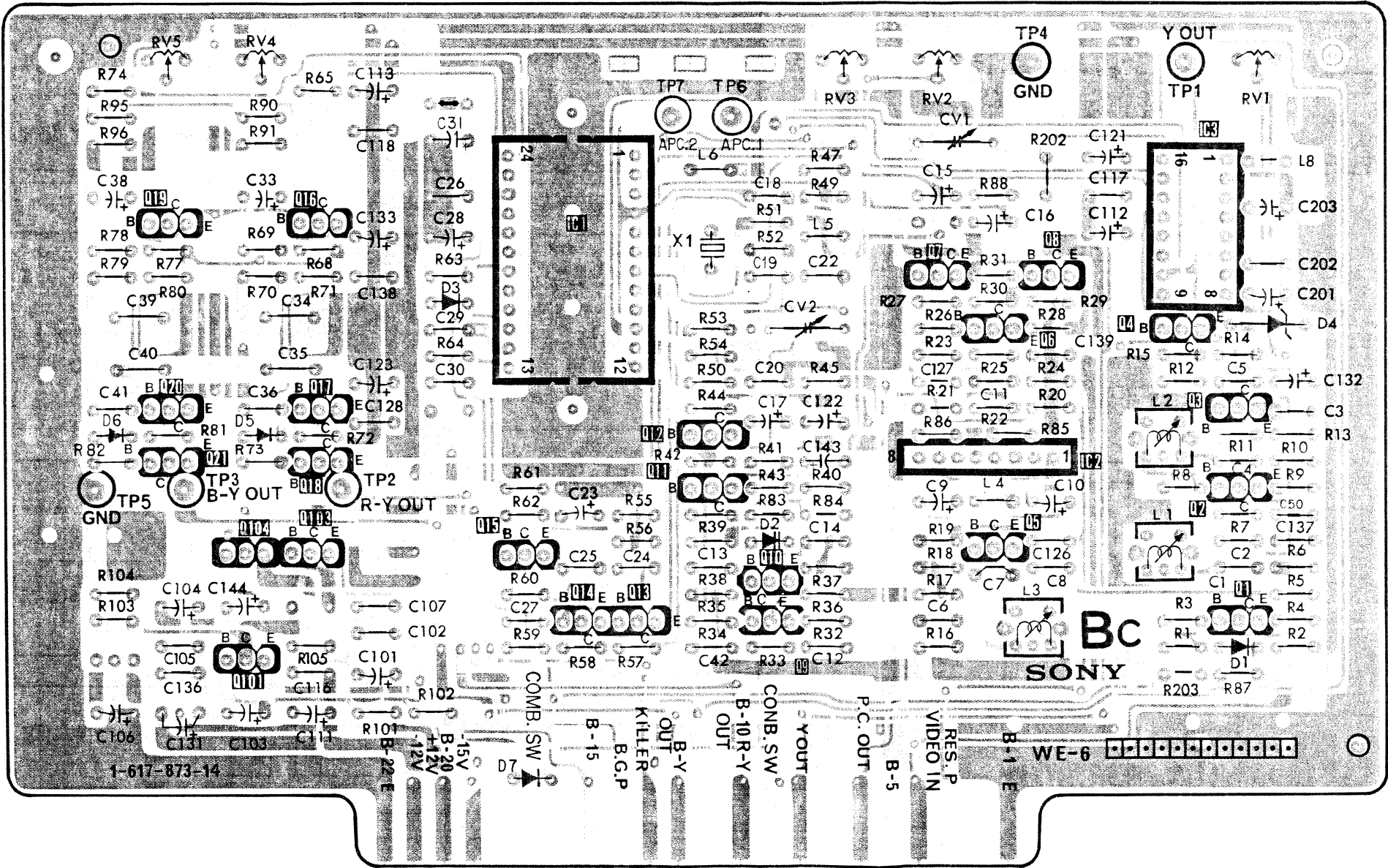
- Pattern from the side which enables seeing.
- Pattern of the rear side.

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF) (BVM-1311 ONLY)



BC Board (NTSC DECODER Y. TRAP) (BVM-1311 ONLY)

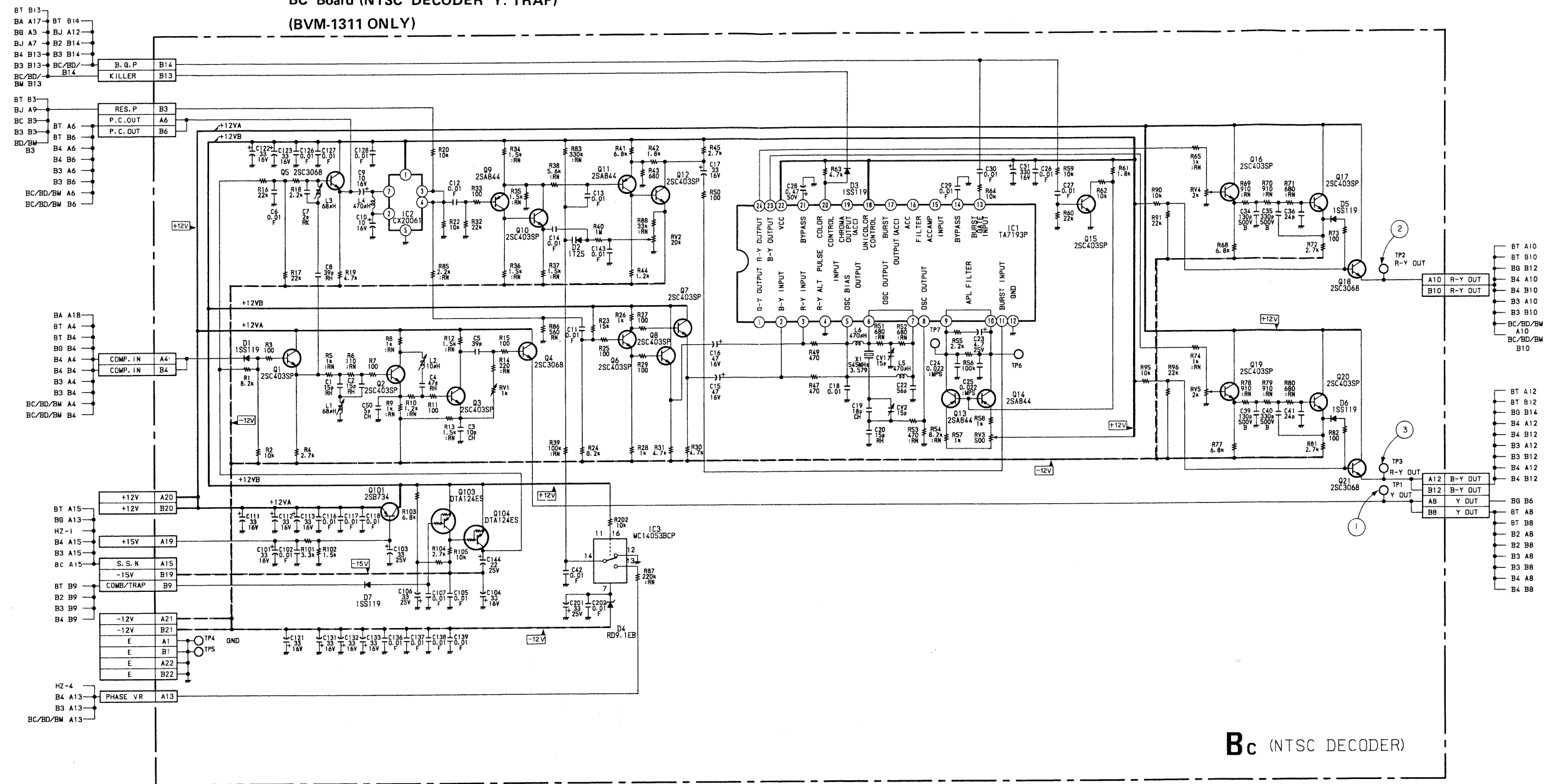
IC	1											2		3			
Q	19 20 21	16 17 18				12 11				10 9	7	6 5	8	4	3 2 1		
D	6	5	3			7			2	RV3		RV2	TP4	TP1	RV1		
TP	RV5		RV4		TP7		TP6	RV3		RV2	TP4		TP1		RV1		
ADJ	TP5	TP3	TP2			CV2		CV1		TP4		TP1		RV1			



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

BC BC

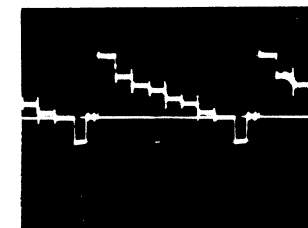
**BC Board (NTSC DECODER Y. TRAP)
(BVM-1311 ONLY)**



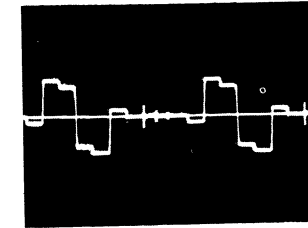
BC BOARD

1C1	TA7193P	DEMODULATOR
2	CX20061	RESIDUAL SWITCH
3	MC14053BCP	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

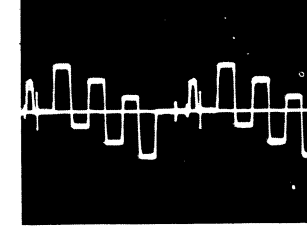
14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB3	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



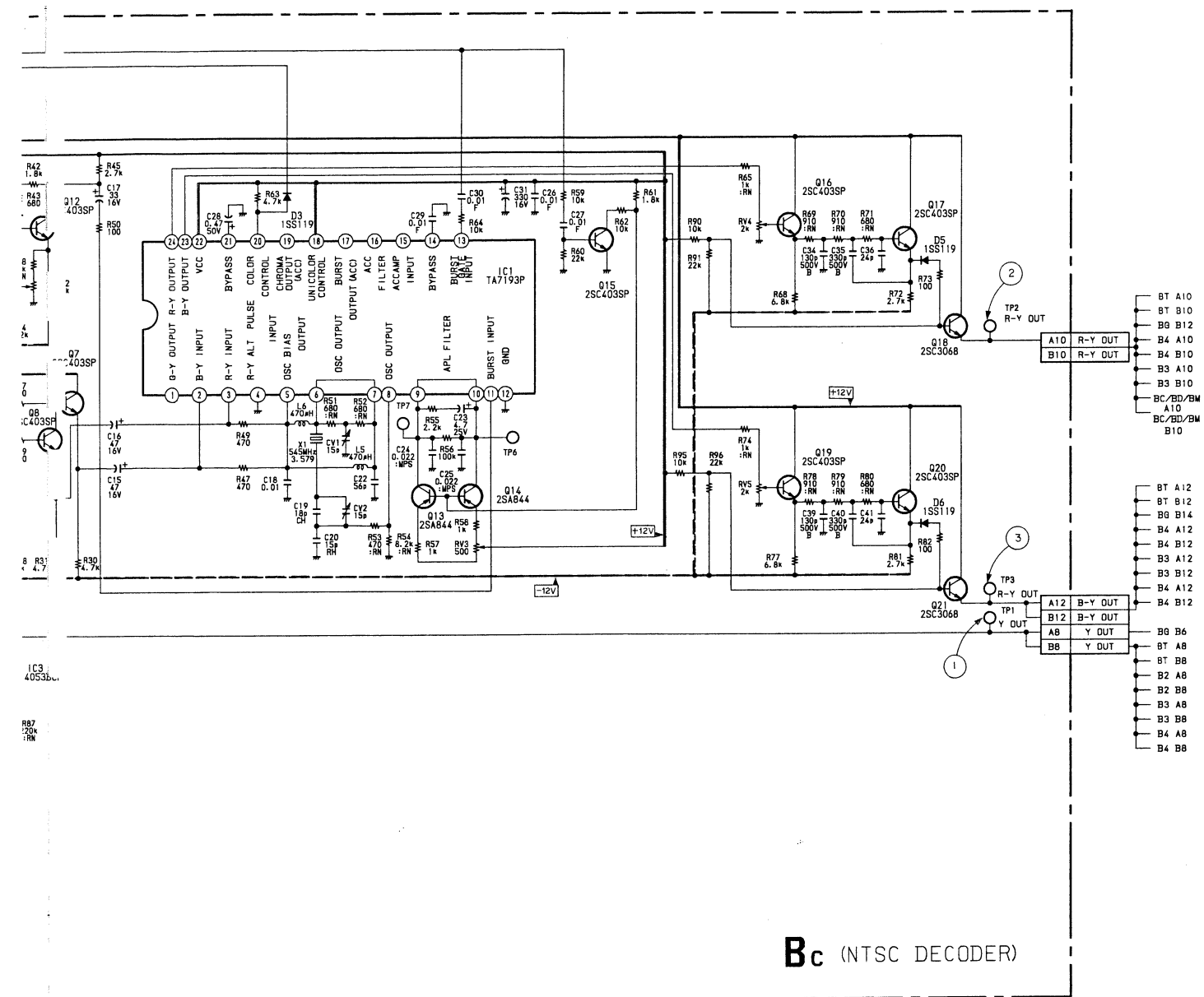
① 1Vp-p (H)



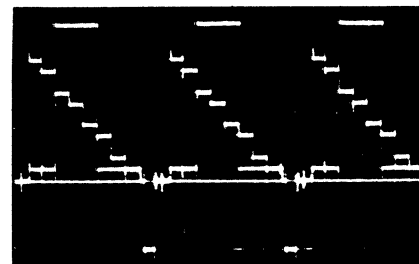
② $0.3V_{p-p} (H)$



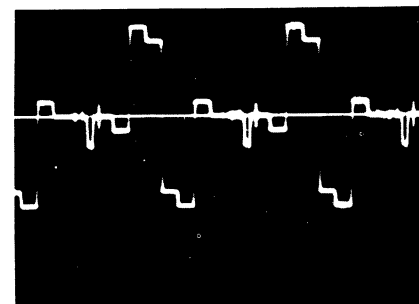
③ $0.36 \text{ V}_{p-p} (H)$



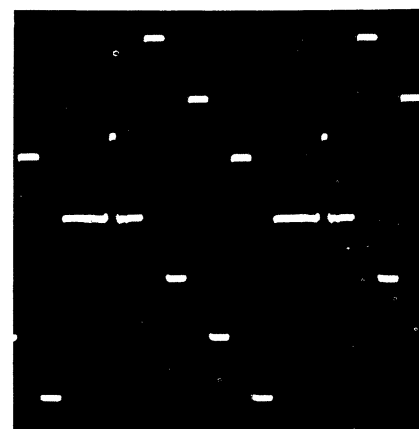
BD board (PAL DECODER Y.TRAP) (BVM-1411P ONLY)



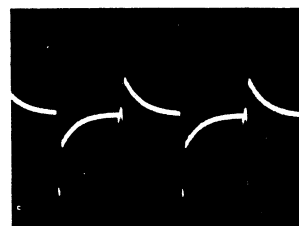
1 1Vp-p (H)



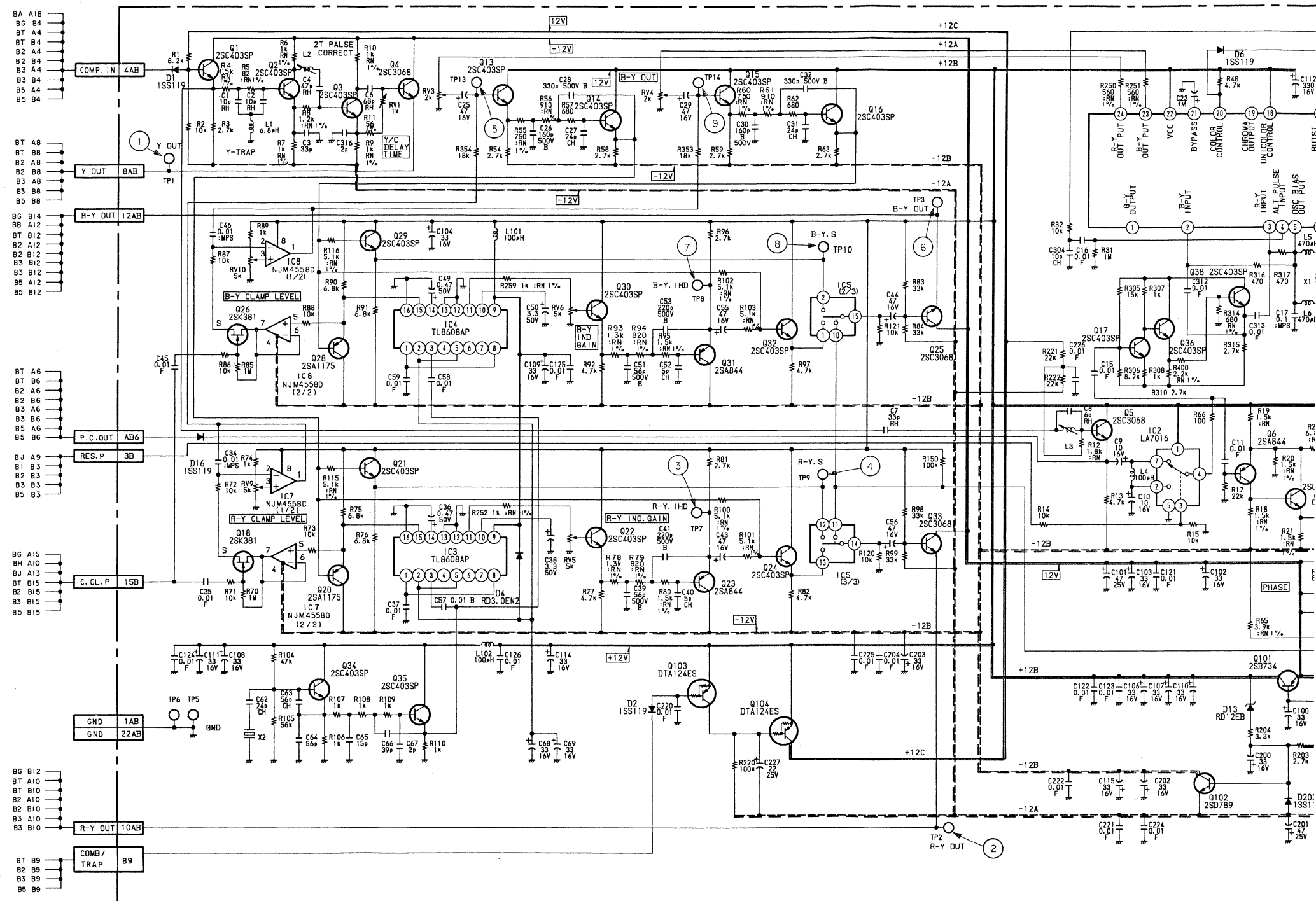
2 0.3Vp-p
3 0.32Vp-p
4 0.32Vp-p
5 0.36Vp-p



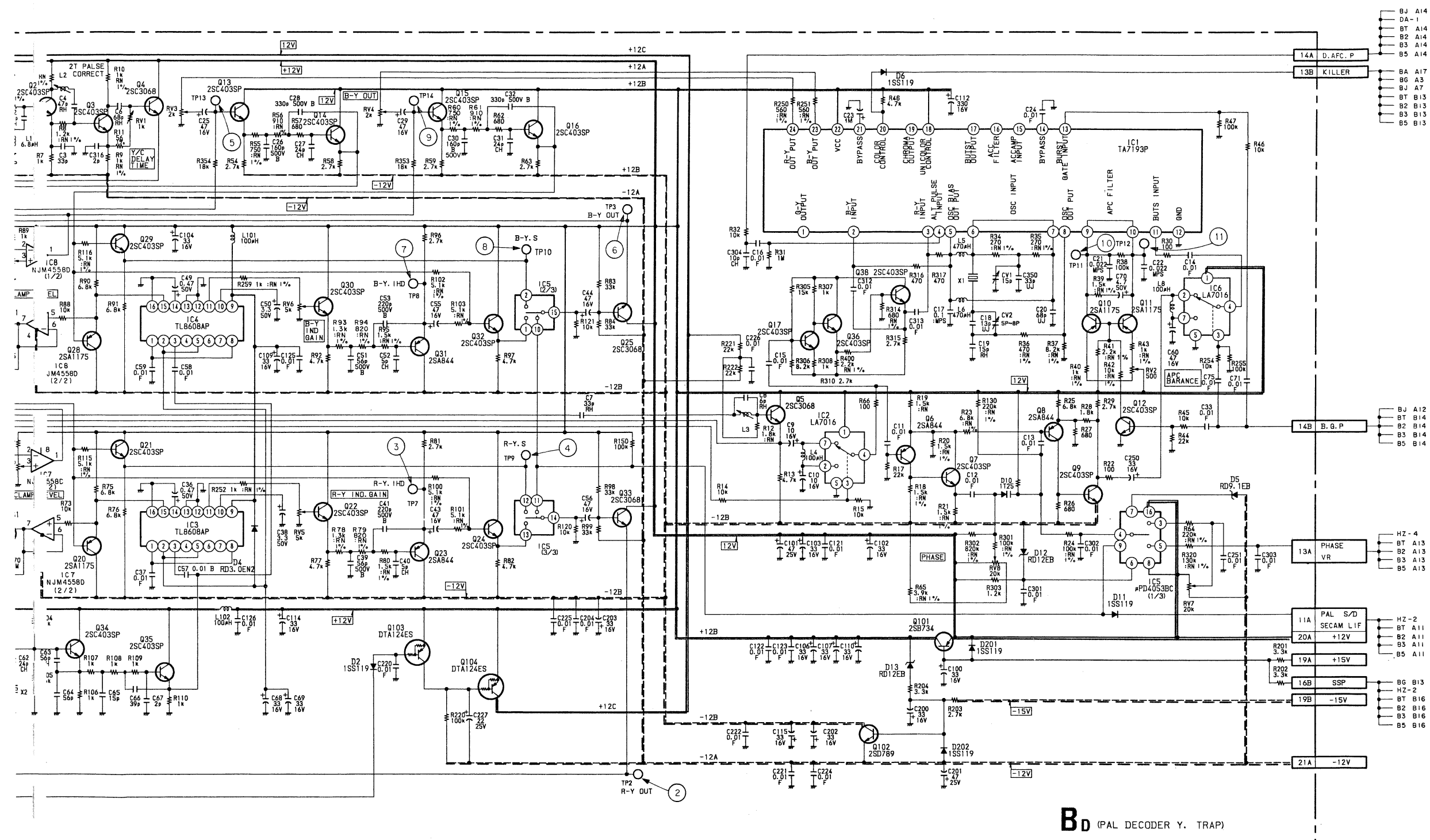
6 0.38Vp-p
7 0.38Vp-p
8 0.39Vp-p
9 0.42Vp-p



10 0.26Vp-p (H)
11 0.26Vp-p (H)

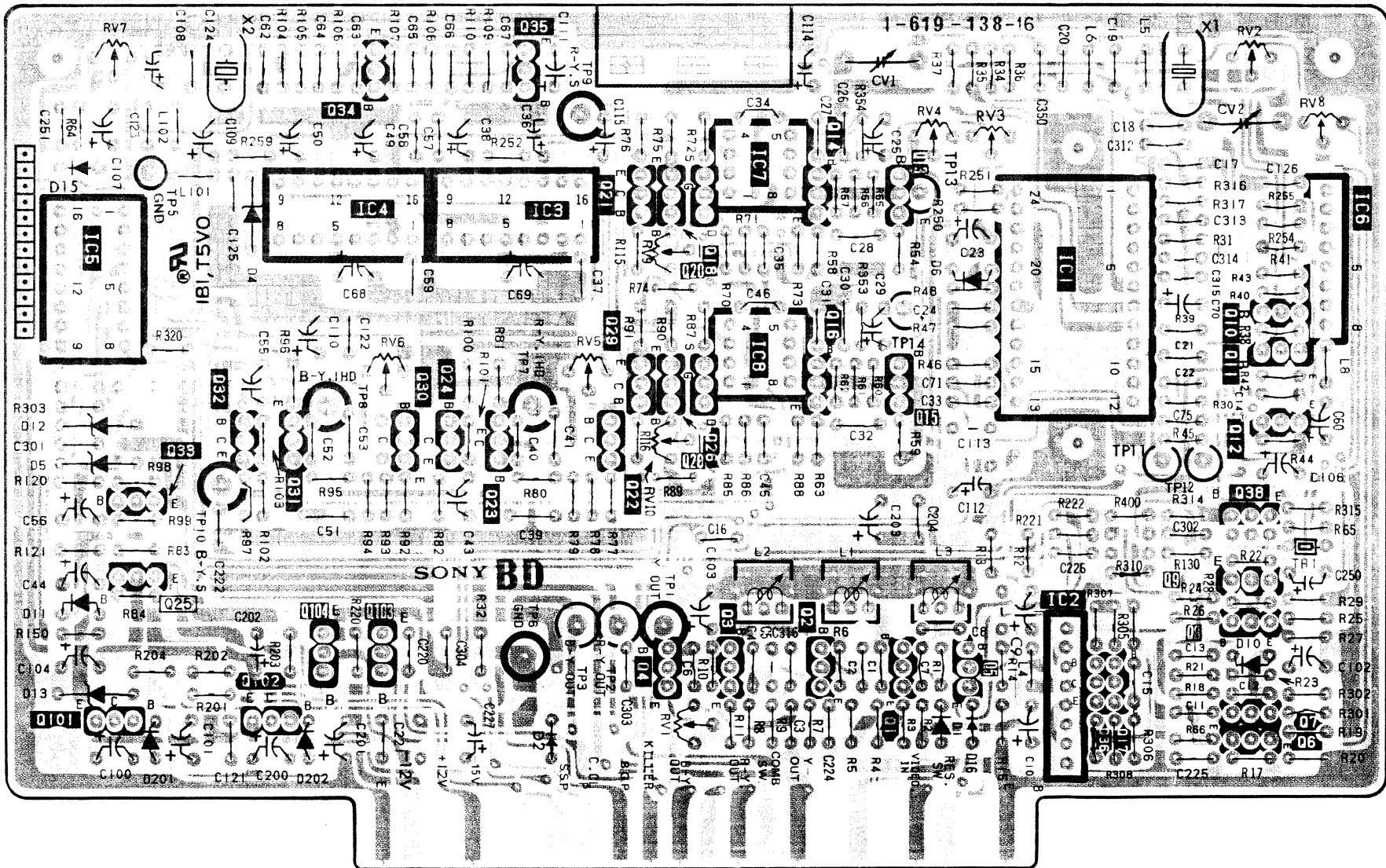


BD BD



BD board (PAL DECODER Y. TRAP) (BVM-1411P ONLY)

IC	5	4	3	7	2	6
				8		
Q		34	35			10 11 12
				21 20 18	14 13	38
	33	32 31	30 24 23	22 29 28 26	16 15	9
	25					8
	101	102 104 103		4 3	2 1 5	7
						6
D	15 12 11 13	4			6	
	201	202	2		1	10
ADJ · TP	RV7 TP5		TP9		CV1 RV4 TP13 TP14	RV2 CV2 RV8
		RV6	RV5 RV9			
	TP10	TP8	TP7 TP6	RV10 TP1 RV1		TP11 TP12



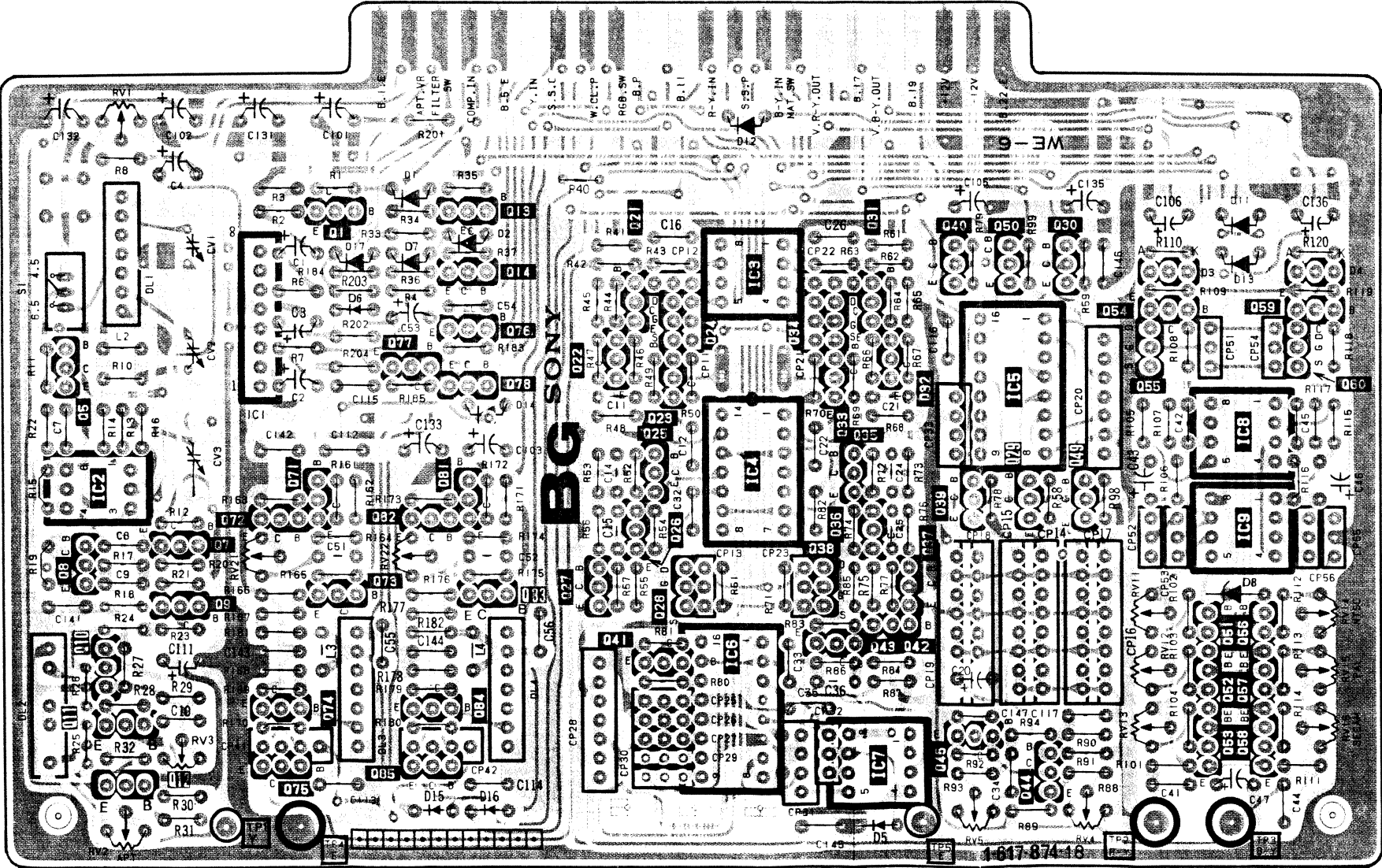
BD BOARD

IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	MC14053BCP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	NJM4558P	R-Y CLAMP
8	NJM4558P	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTOR
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC403SP	PHASE CONTROLLER
8	NJM4558P	PHASE CONT. AMP.
9	NJM4558P	PHASE CONT. AMP.
10	2SA1175	APL FILTER
11	2SA1175	APL FILTER
12	2SC403SP	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC403SP	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA1175	BUFFER
21	2SC403SP	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC403SP	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA1175	BUFFER
29	2SC403SP	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC403SP	BUFFER
33	2SC3068	BUFFER
34	2SC403SP	CCD CLOCK GEN
35	2SC403SP	CCD CLOCK GEN
36	2SC403SP	BUFFER
38	2SC403SP	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD789	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EB1	CCD BIAS
5	RD9.1EB2	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR

-  : Pattern from the side which enables seeing.
- : Pattern of the rear side.

BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, VECTOR OUT, NTSC MATRIX SW, G-Y MATRIX AMP)

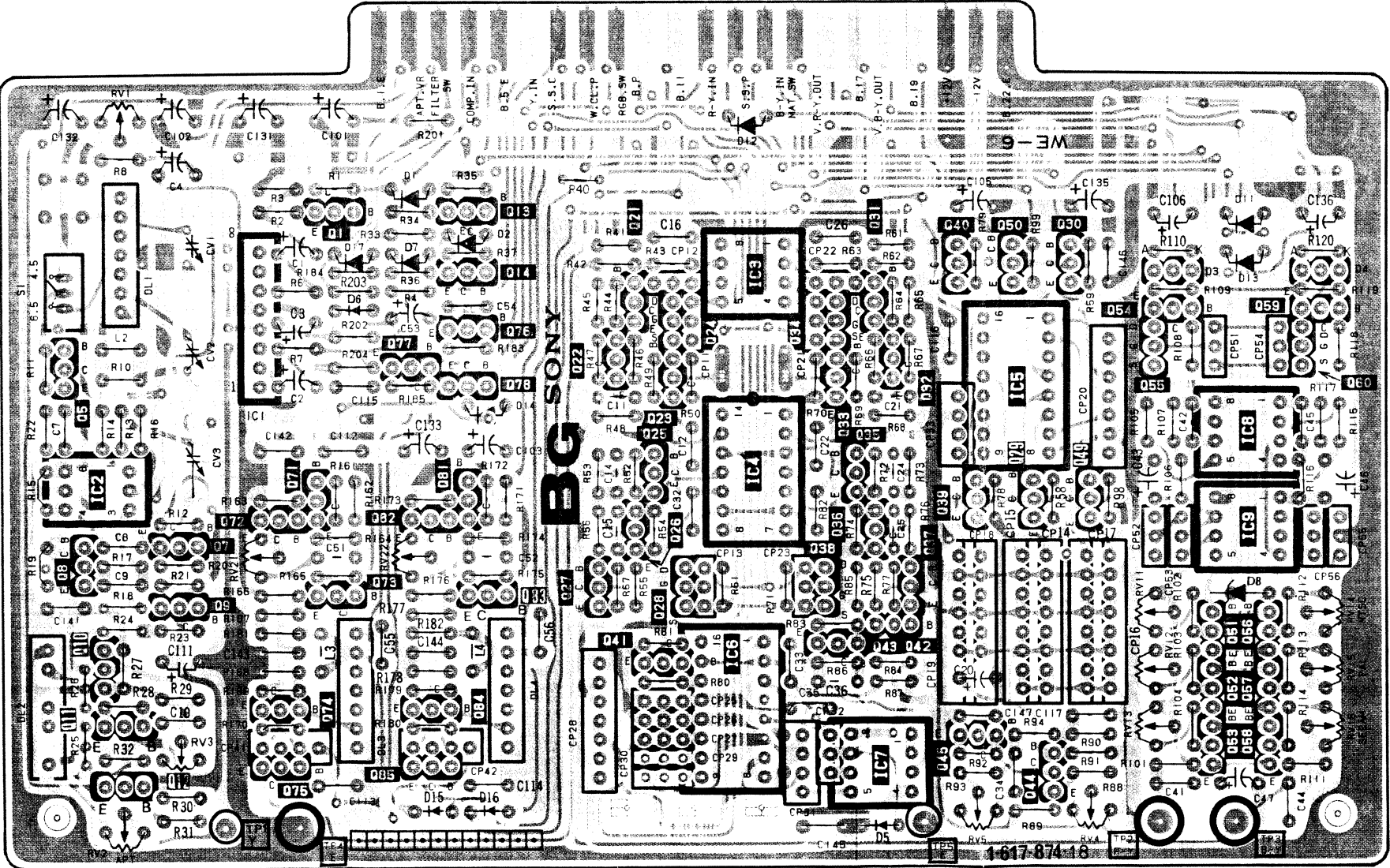
IC	1										3 4 6										5 7										8 9																			
Q	1 5 8 10 11 12 7 9 72 71 73 74 75										13 14 76 78 81 82 83 84 85 77 21 22 23 24 25 26 27 28 41										31 32 33 34 35 36 37 38 43 42										40 50 30 39 29 49 45 44										54 55 59 60 51 52 53 56 57 58									
D	17 6										1 7 2 14 15 16										12										3										11 13 8 4									
TP	RV1																																																	
ADJ	RV2 CV2 CV3 RV3 RV21 TP1 TP4										RV22										TP5 RV5										RV4 TP2 TP3										RV11 RV12 RV13 RV14 RV15 RV16									



- Pattern from the side which enables seeing.
- Pattern of the rear side.

BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, VECTOR OUT, NTSC MATRIX SW, G-Y MATRIX AMP)

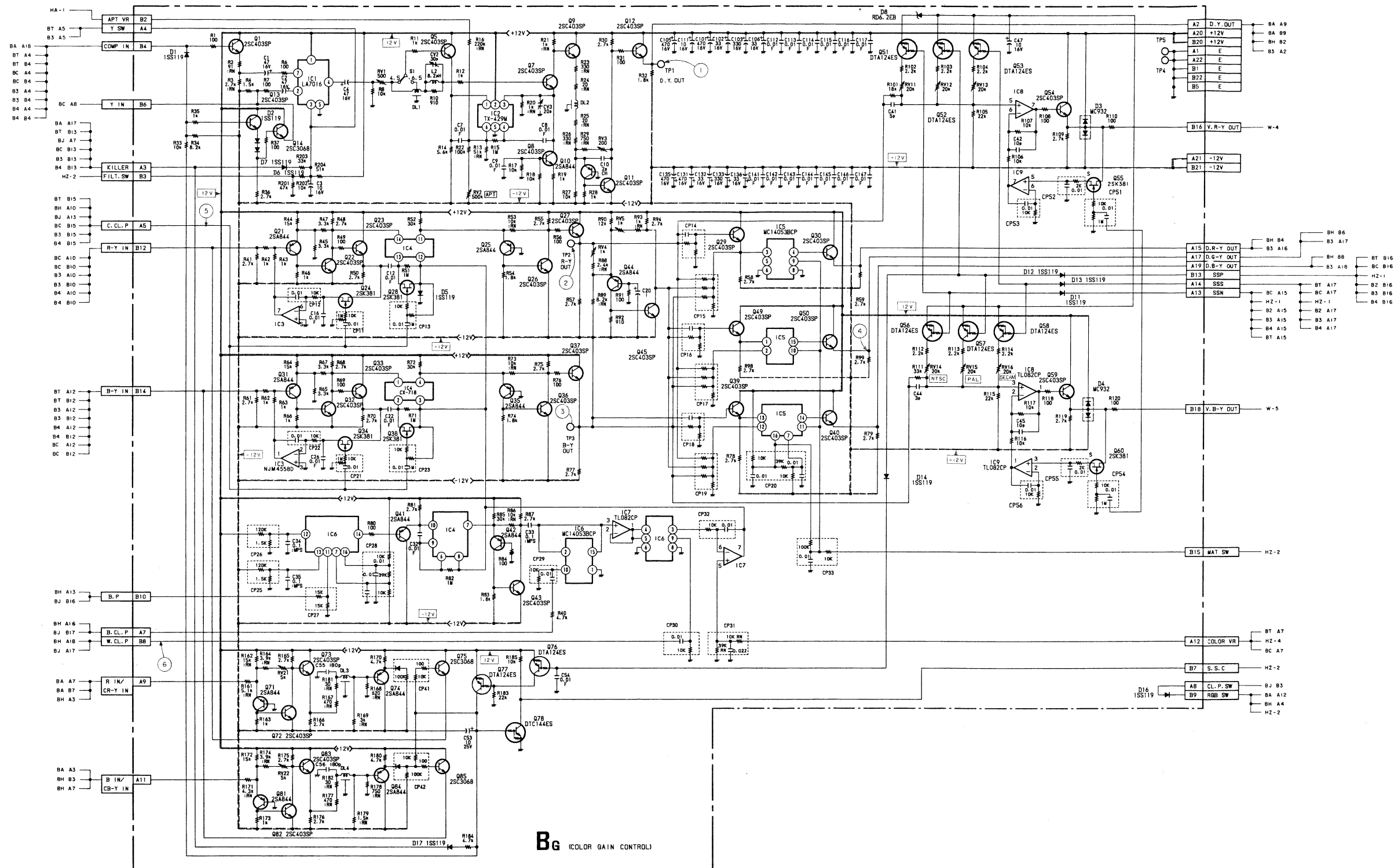
IC	1										3 4 6										5										8 9																																							
Q	1										13 14 76 78 81 83										21 24 22 23 25 26 27 28 41										34 31 32 33 35 36 37 38 42 43										40 50 30 39 29 49										54 55										59 60									
D	5 8 10 11 12										7 9 72 73 74 75										82 84 85										45										44										51 52 53										56 57 58									
TP	RV1										12										3										11 13 8										4																													
ADJ	RV2										5										8																																																	
	RV3 RV21 TP1 TP4										RV22										RV11 RV12 RV13										RV4 TP2 TP3										RV14 RV15 RV16																													



- Pattern from the side which enables seeing.
- Pattern of the rear side.

**BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL,
Y DERAY, VECTOR OUT NTSC MATRIX SW, G-Y MATRIX AMP)**

36 |

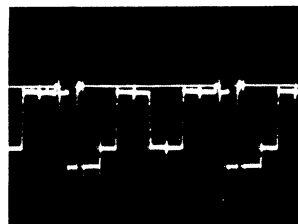
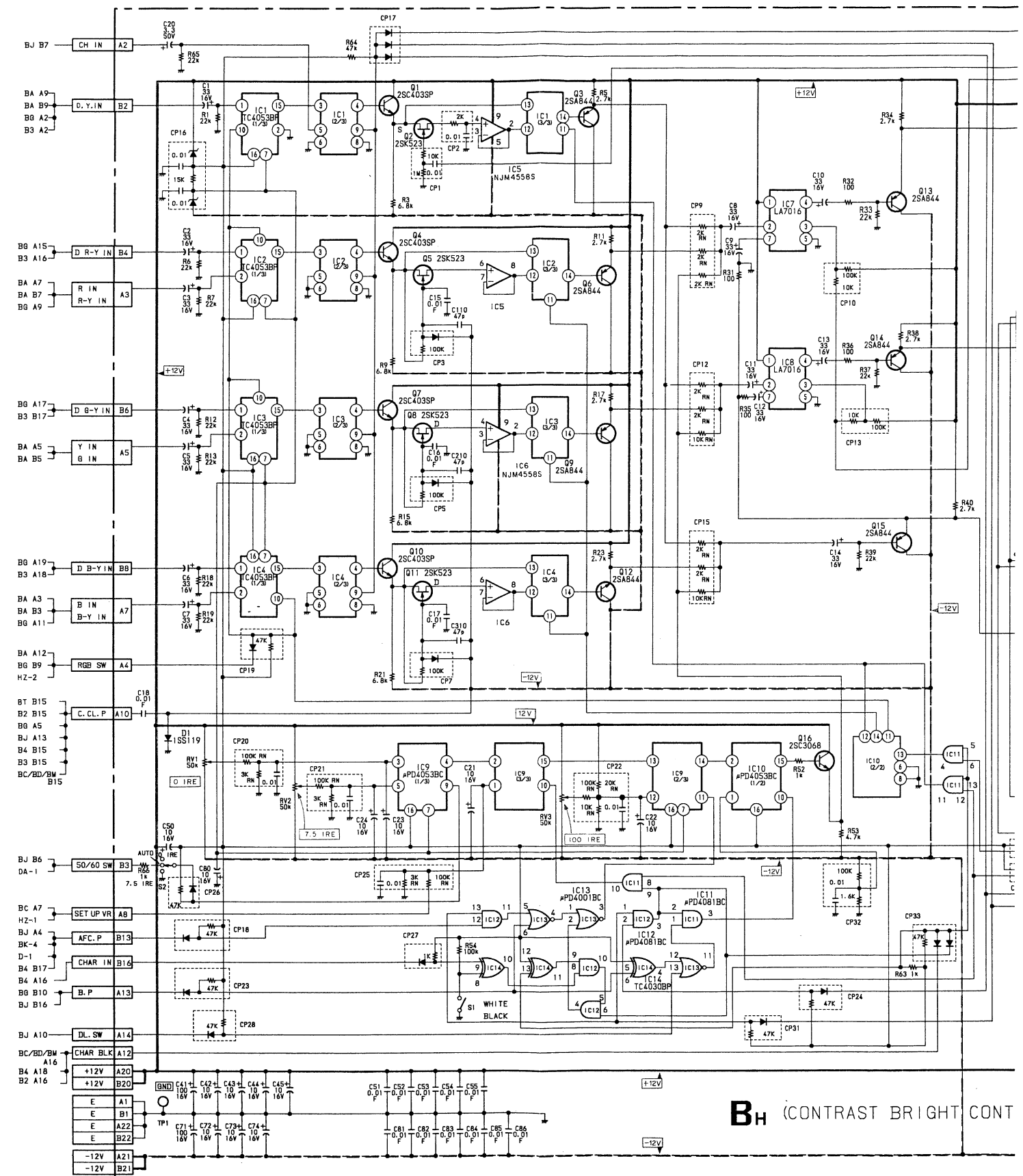


BH BOARD

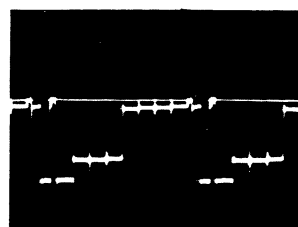
IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(2/4)		Y SCREENING PULSE GEN
(4/4)		
12	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	MC14001BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF

Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/Y BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT

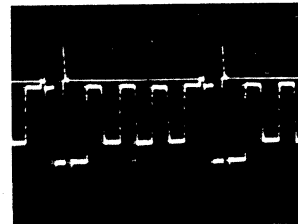
BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



① 0.8Vp-p (H)

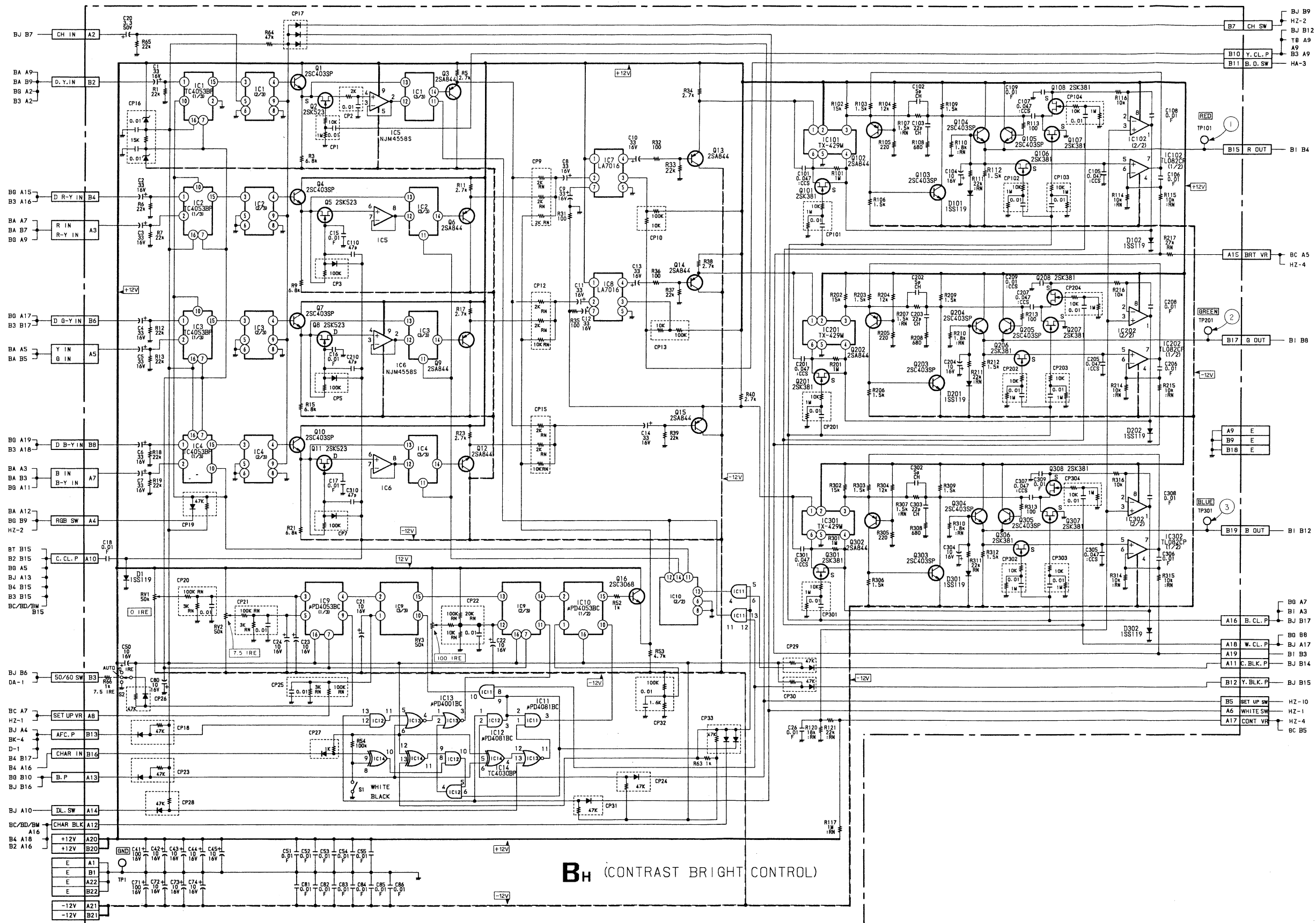


② 0.8Vp-p (H)



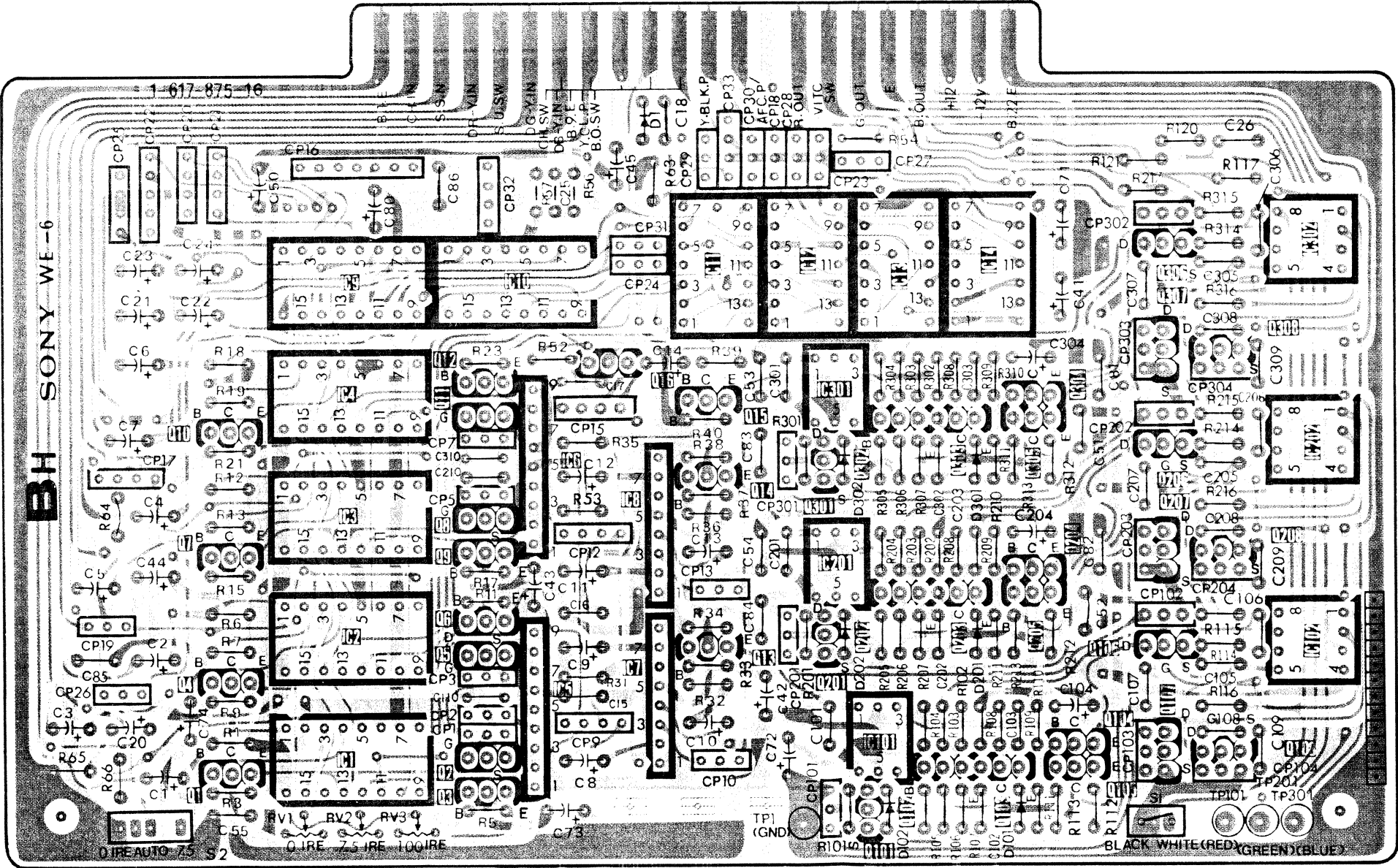
③ 0.7Vp-p (H)

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



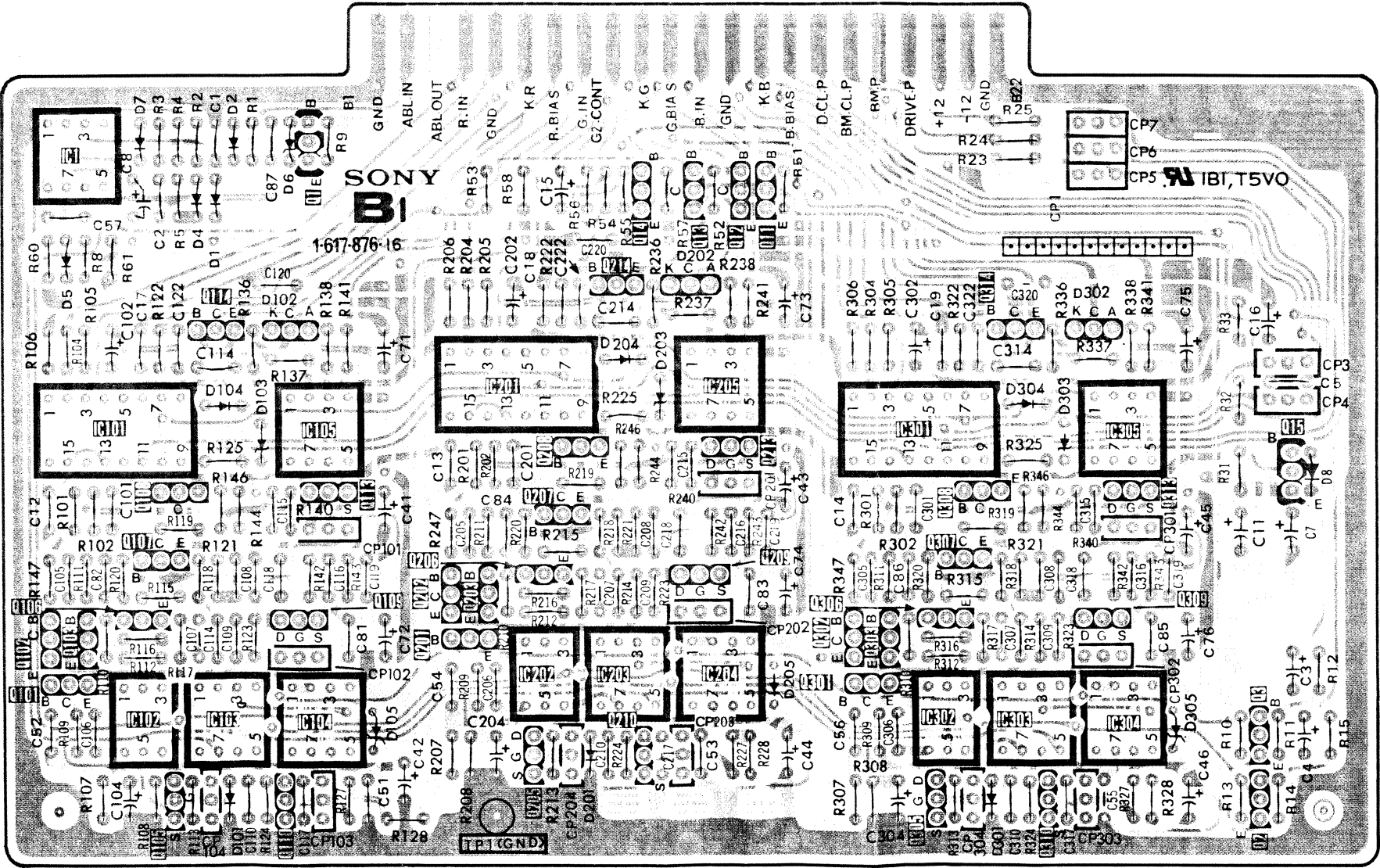
BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

IC		9		10		11		12	13	14		102
		4						301				202
		3		6		8		201				302
		2		5		7		101				
Q	10		12		16		15				306	308
			11								307	
	7		8				14	301	302	303	304	206
	4		9								305	207 208
D			6								204	
			5					201	202	203	205	106
			2				13					
	1		3					101	102	103	104	105 107 108
TP								302		301		
								202		201		
ADJ								102		101		
												TP201
												TP101 TP301

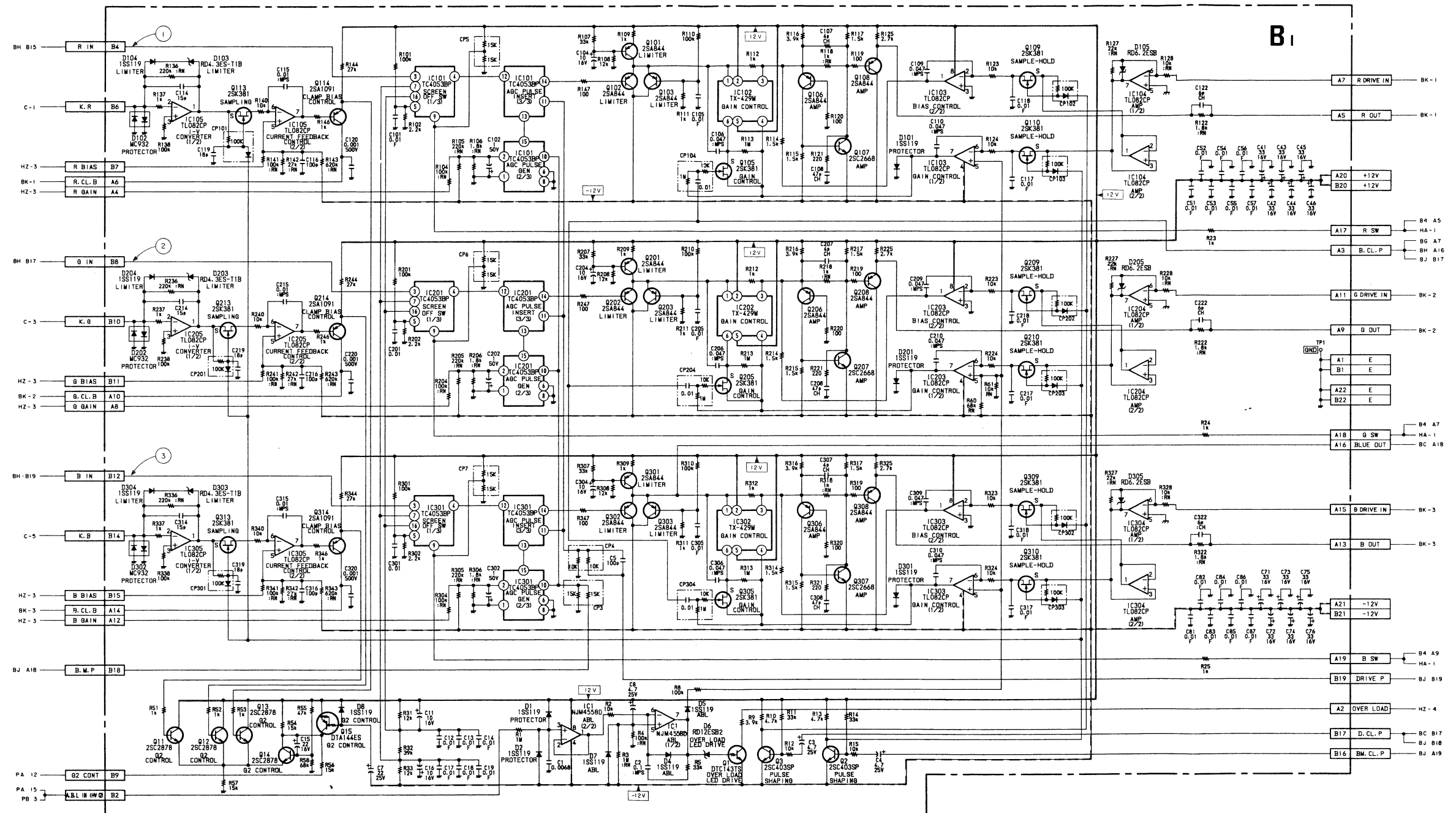


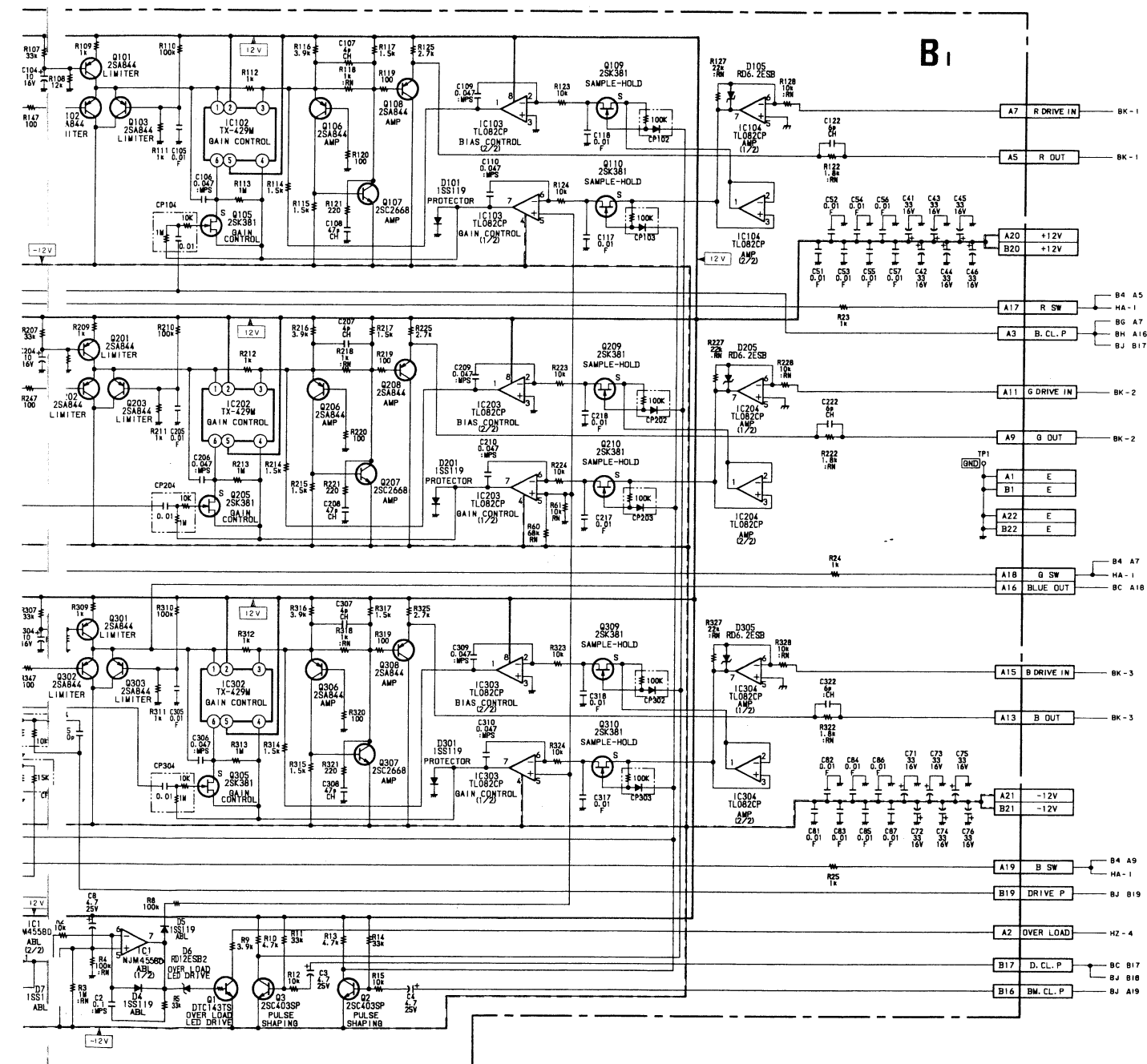
BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	101			105		201		205		301		305
	102	103	104			202	203	204		302	303	304
Q		108	114	113		208	214	213		314		15
	102 103	107				207				308		
	101	106		109		206		209		307		3
		105		110		201	205	210		302 303	306	2
										301	305	
D	5	7	4	2	6			202				
			104	102			204	203		304	302	
			101	103						303		8
					105	201		205		301	303	305
TP						TP I						



- Pattern from the side which enables seeing.
- Pattern of the rear side.

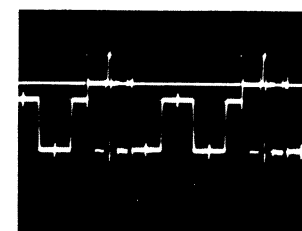




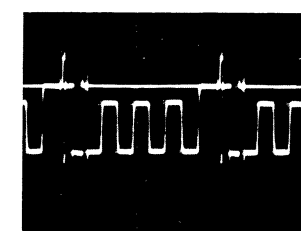
BI BOARD

IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL

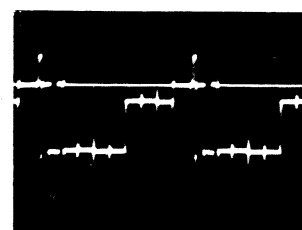
Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	MC932	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
D105	RD6.2ESB	LIMITER
201	1SS119	PROTECTOR
202	MC932	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
D205	RD6.2ESB	LIMITER
301	1SS119	PROTECTOR
302	MC932	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
D305	RD6.2ESB	LIMITER



① 1.0Vp-p(H)



③ 1.0Vp-p(H)

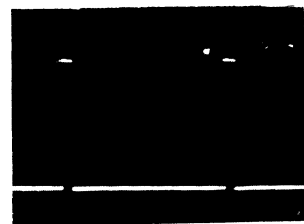
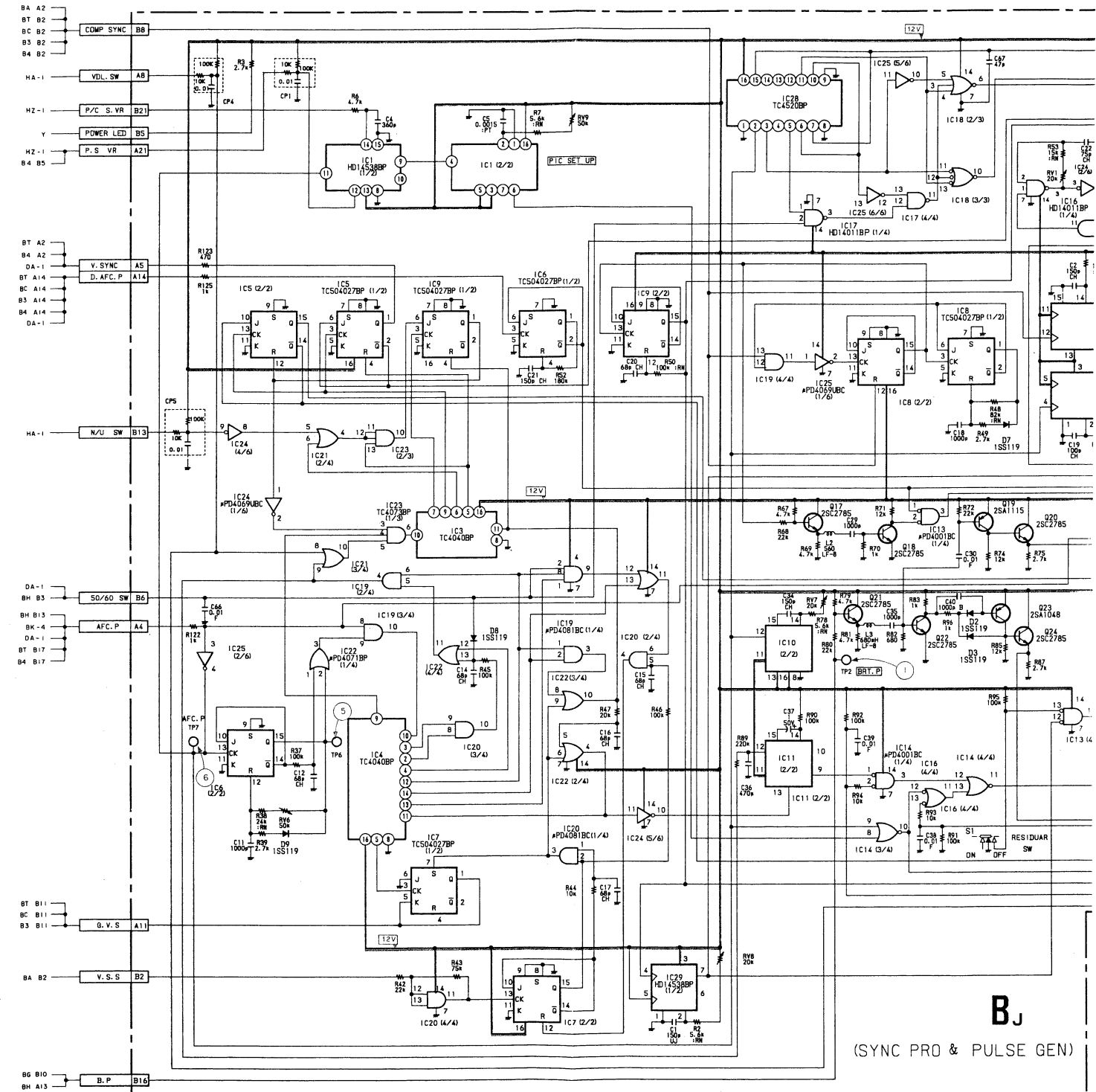


② 1.0Vp-p(H)

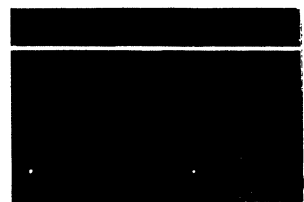
BJ board (SYNC PROCESSING & PULSE GEN)

IC1	HD14538BP	PIC.SET.PULSE GEN
2	MC14001BCP	CROSS HATCH GEN
3	TC4040BP	V SYNC & DELAY
4	TC4040BP	V COUNT
5	TC504027BP	V SYNC & DELAY
6(1/2)	TC504027BP	CHROMA CLAMP PULSE GEN
7(2/2)	TC504027BP	2FH MULTI
7	TC504027BP	V COUNT
8	TC504027BP	1H PULSE PROCESS
9(1/2)	TC504027BP	V SYNC & DELAY
10(2/2)	TC504027BP	1H PULSE PROCESS
10(1/2)	HD14538BP	B.G.P GEN 2
11(1/2)	HD14538BP	H CYCLE
12	HD14538BP	CROSS HATCH GEN
13(1/4)	HD14538BP	SPLIT Y BLK, C BLK PULSE GEN
14(1/4)	MC14001BCP	Y CYCLE AGC & CLAMP PULSE GEN
15	MC14001BCP	Y CL.P GEN
16(1/4)	MC14001BCP	B.G.P GEN 2
17	MC14001BCP	RESIDUAL PULSE GEN
18	MC14001BCP	SPLIT Y BLK: C BLK PULSE GEN
19(1/4)	MC14071BCP	V CYCLY AGC & CLAMP PULSE GEN
20	MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
21(1/4)	MC14071BCP	CROSS HATCH GEN
22(2/4)	MC14071BCP	Y CYCLE AGC & CLAMP PULSE GEN
23(3/4)	MC14071BCP	H OR V BLK, P
24(4/4)	MC14071BCP	SPLIT Y BLK, C BLK PULSE GEN
25	TC4023BP	CROSS HATCH GEN
26	TC4023BP	V COUNT
27(1/4)	MC14081BCP	V SYNC & DELAY
28(2/4)	MC14081BCP	2FH MULTI
29(3/4)	MC14081BCP	1H PULSE PROCESS
30(4/4)	MC14081BCP	V COUNT
31(1/4)	MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
32(2/4)	MC14071BCP	V SYNC & DELAY
33(3/4)	MC14071BCP	V COUNT
34(4/4)	MC14071BCP	2FH MULTI
35(1/4)	MC14071BCP	V COUNT
36(2/4)	MC14071BCP	V SYNC & DELAY
37(3/4)	MC14071BCP	V COUNT
38(4/4)	MC14071BCP	V SYNC & DELAY

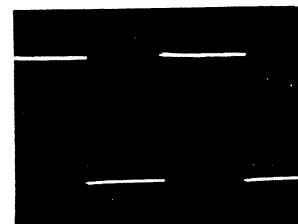
IC23(1/3)	TC4073BP	V SYNC & DELAY
2(2/3)	TC4073BP	V COUNT
3(3/3)	TC4073BP	V SYNC & DELAY
24(1/5)	MC14069UBCP	CROSS HATCH GEN
25(2/5)	MC14069UBCP	V COUNT
26(3/5)	MC14069UBCP	1H PULSE PROCESS
27(4/5)	MC14069UBCP	INV
28(5/5)	MC14069UBCP	H OR V BLK.P
29(1/6)	MC14069UBCP	Y CYCLE AGC & CLAMP PULSE GEN
30(2/6)	MC14069UBCP	CROSS HATCH GEN
31(3/6)	MC14069UBCP	1H PULSE PROCESS
32(4/6)	MC14069UBCP	CLAMP PULSE CHANGE SW
33(5/6)	MC14069UBCP	CROSS HATCH GEN
34(6/6)	MC14069UBCP	H OR V DL SW
35	TC4520BP	CROSS HATCH GEN
36	HD14538BP	B.G.P GEN 1
37	HD14538BP	Y.CL.P GEN
38	2SC2785	CROSS HATCH GEN
39	2SC2785	Y.CL.P GEN
40	2SC2785	Y.CL.P GEN
41	2SC2785	CHROMA CLAMP PULSE GEN
42	2SC2785	CHROMA CLAMP PULSE GEN
43	2SA1115	H CYCLE
44	2SC2785	H CYCLE
45	2SC2785	H CYCLE
46	2SC2785	H CYCLE
47	2SA1048	H CYCLE
48	2SC2785	H CYCLE
49	2SC2785	CHROMA CLAMP PULSE GEN
50	2SC2785	Y.CL.P GEN
51	1SS119	CROSS HATCH GEN
52	1SS119	H CYCLE
53	1SS119	H CYCLE
54	1SS119	1H PULSE PROCESS
55	1SS119	V SYNC & DELAY
56	1SS119	2FH MULTI
57	MC932	PROT



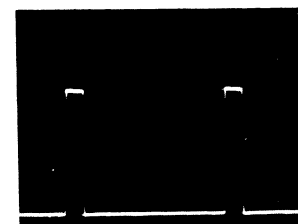
① 12Vp-p (H)
② 12Vp-p (H)



③ 12Vp-p (V)



④ 12Vp-p (H)
⑤ 12Vp-p (H)



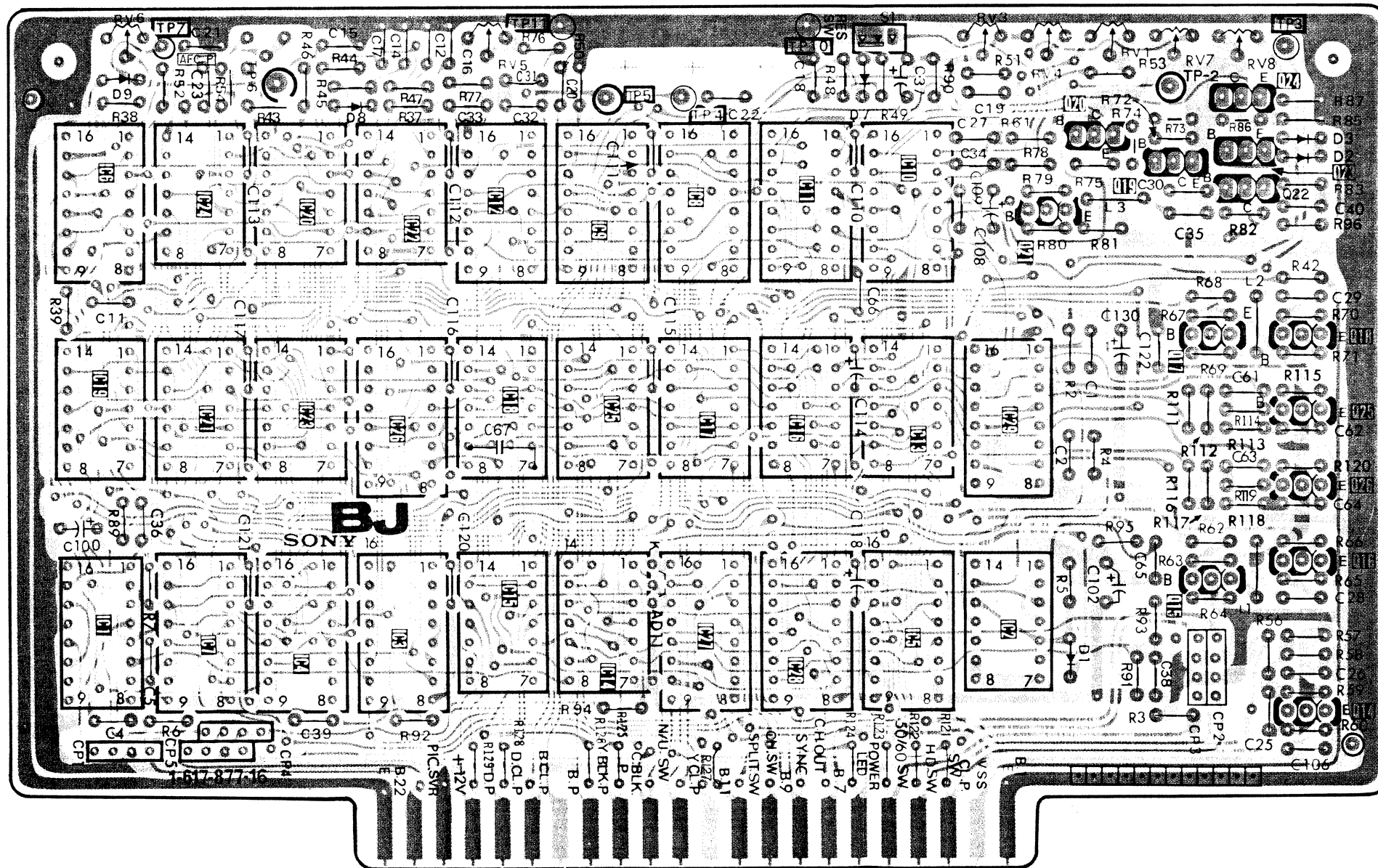
⑥ 12Vp-p (H)

3J board (SYNC PROCESSING & PULSE GEN)



BJ board (SYNC PROCESSING & PULSE GEN)

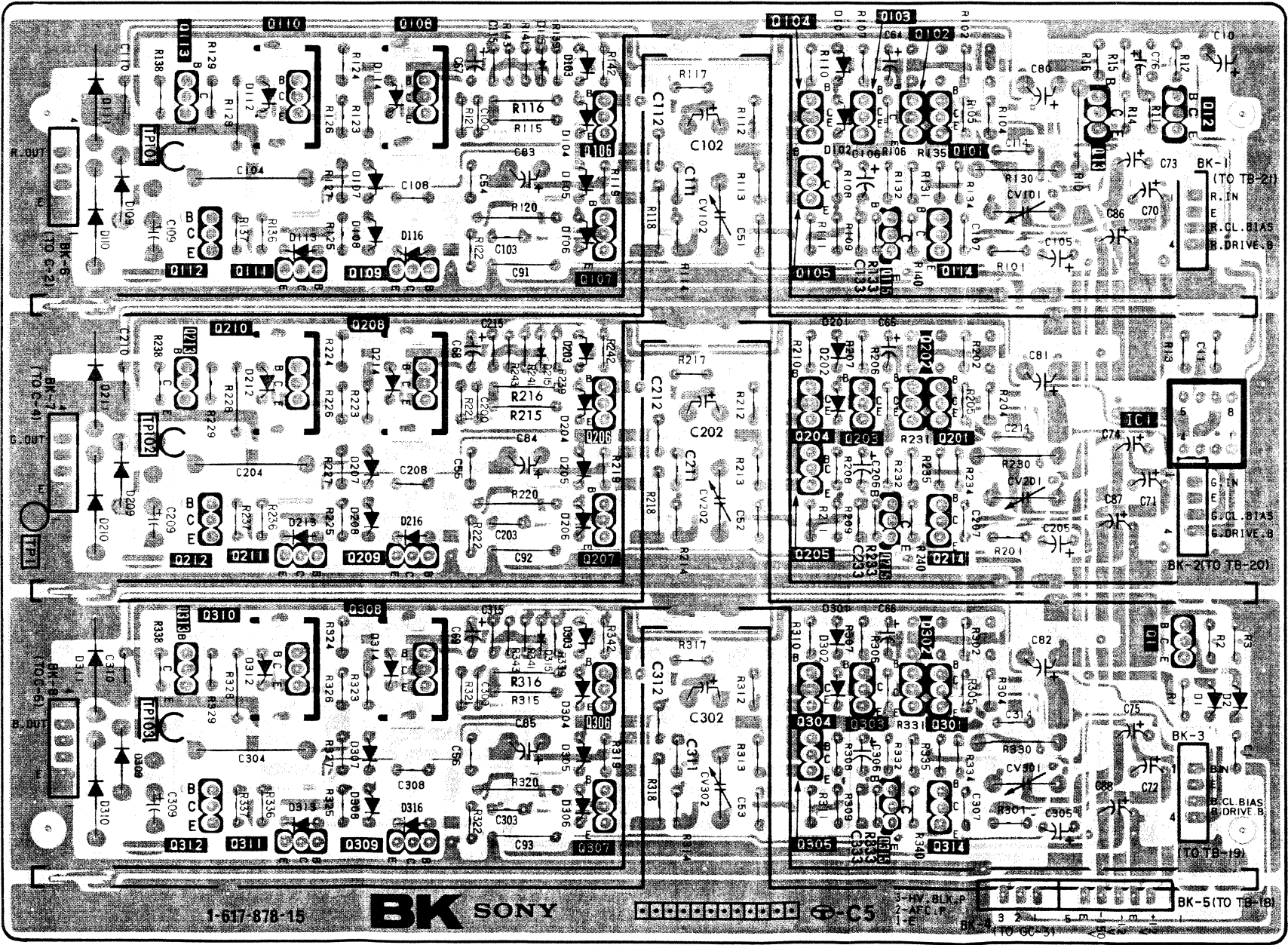
IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2					
Q											20	19	24 23 22	17	18 25 26 16 14
D	9	8			7					3 2					
TP ADJ	RV6 TP7	TP6		RV5	TP11	TP5	TP4	TP10	RV3	RV4	RV1	RV7 TP2	RV8	TP3	



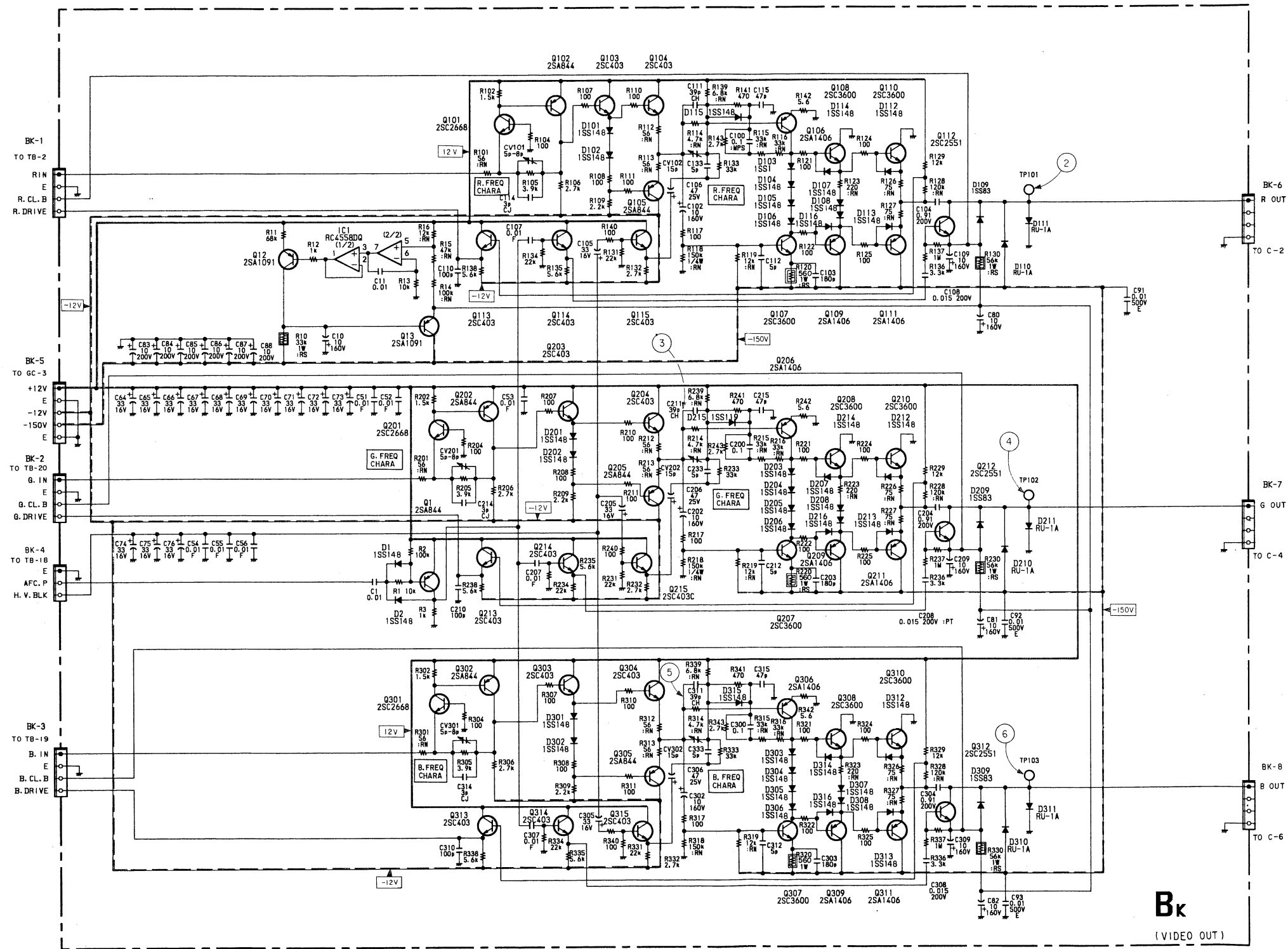
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BK board (VIDEO OUT AMP)

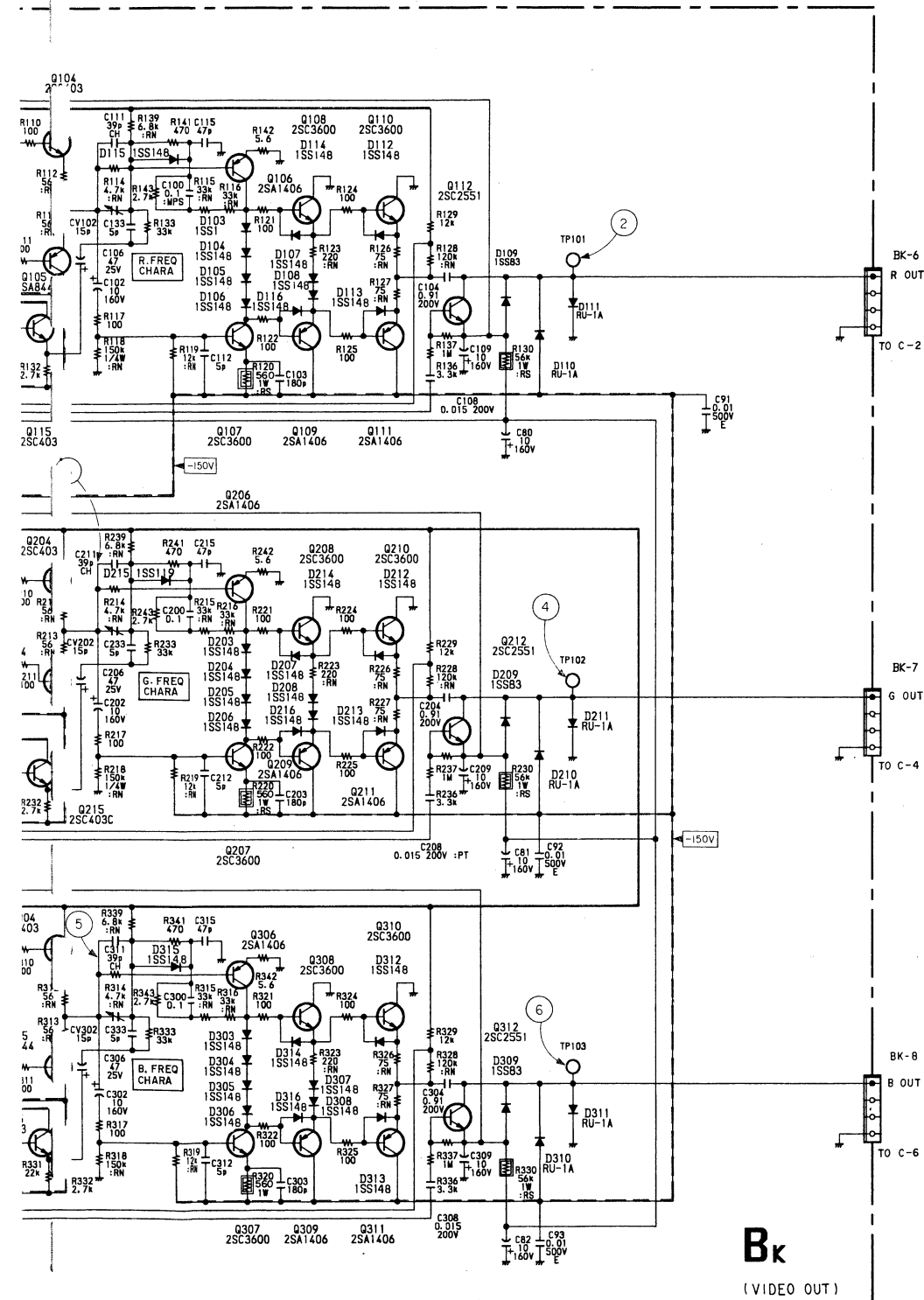
IC											1
Q	113	110	108		106	104	103	102	101	13	12
	213	210	208		207	205	203	202	201		
	212	211	209		206	204	215	214			
	313	310	308		306	304	303	302	301		1
	312	311	309		307	305	315	314			
D	111	112	107	114	115	104	103				
	110	113	108	116	105	106	102				
	211	212	207	214	215	204	203	201			
	210	213	208	216	206	205	202	202			
	311	312	307	314	315	304	303	301			
	310	313	308	316	306	305	302	302		1	2
TP	TPI01		CVI02		CVI01						
ADJ	TPI02		CV202		CV201						
	TPI03		CV302		CV301						
	TPI										



-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

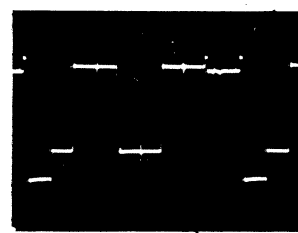


BK BOARD

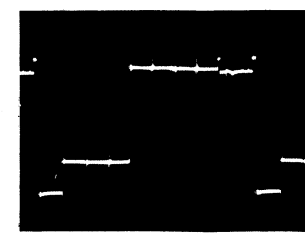


IC1	NJM4558D	LIPPLE FILTER
Q1	2SA844	INVERTER
12	2SA1091	LIPPLE FILTER
13	2SA1091	LIPPLE FILTER
101	2SC2668	R-PRE AMP.
102	2SA844	R-PRE AMP.
103	2SC403SP	BUFF.
104	2SC403SP	BUFF.
105	2SA844	BUFF.
106	2SA1406	R-VIDEO OUT
107	2SC3600	R-VIDEO OUT
108	2SC3600	BUFF.
109	2SA1406	BUFF.
110	2SC3600	BUFF.
111	2SA1406	BUFF.
112	2SC2551	R-CLAMP
113	2SC403SP	R-CLAMP
114	2SC403SP	R-CLAMP
115	2SC403SP	BLANK PULSE BUFF.
201	2SC2668	G-PRE AMP.
202	2SA844	G-PRE AMP.
203	2SC403SP	BUFF.
204	2SC403SP	BUFF.
205	2SA844	BUFF.
206	2SA1406	G-VIDEO OUT
207	2SC3600	G-VIDEO OUT
208	2SC3600	BUFF.
209	2SA1406	BUFF.
210	2SC3600	BUFF.
211	2SA1406	BUFF.
212	2SC2551	G-CLAMP
213	2SC403SP	G-CLAMP
214	2SC403SP	G-CLAMP
215	2SC403SP	BLANK PULSE BUFF.
301	2SC2668	B-PRE AMP.
302	2SA844	B-PRE AMP.
303	2SC403SP	BUFF.
304	2SC403SP	BUFF.
305	2SA844	BUFF.
306	2SA1406	B-VIDEO OUT
307	2SC3600	B-VIDEO OUT
308	2SC3600	BUFF.
309	2SA1406	BUFF.
310	2SC3600	BUFF.
311	2SA1406	BUFF.
312	2SC2551	B-CLAMP
313	2SC403SP	B-CLAMP
314	2SC403SP	B-CLAMP
315	2SC403SP	BLANK PULSE BUFF.

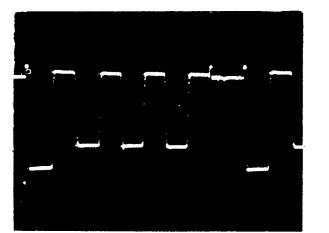
D1	1SS148	INVERTER
2	1SS148	INVERTER
101	1SS148	BIAS
102	1SS148	BIAS
103	1SS148	BIAS
104	1SS148	BIAS
105	1SS148	BIAS
106	1SS148	BIAS
107	1SS148	BIAS
108	1SS148	BIAS
109	1SS83	CLAMP
110	RU-1A	PROTECTOR
111	RU-1A	PROTECTOR
112	1SS148	PROTECTOR
113	1SS148	PROTECTOR
114	1SS148	PROTECTOR
115	1SS148	PROTECTOR
116	1SS148	PROTECTOR
201	1SS148	BIAS
202	1SS148	BIAS
203	1SS148	BIAS
204	1SS148	BIAS
205	1SS148	BIAS
206	1SS148	BIAS
207	1SS148	BIAS
208	1SS148	BIAS
209	1SS83	CLAMP
210	RU-1A	PROTECTOR
211	RU-1A	PROTECTOR
212	1SS148	PROTECTOR
213	1SS148	PROTECTOR
214	1SS148	PROTECTOR
215	1SS148	PROTECTOR
216	1SS148	PROTECTOR
301	1SS148	BIAS
302	1SS148	BIAS
303	1SS148	BIAS
304	1SS148	BIAS
305	1SS148	BIAS
306	1SS148	BIAS
307	1SS148	BIAS
308	1SS148	BIAS
309	1SS83	CLAMP
310	RU-1A	PROTECTOR
311	RU-1A	PROTECTOR
312	1SS148	PROTECTOR
313	1SS148	PROTECTOR
314	1SS148	PROTECTOR
315	1SS148	PROTECTOR
316	1SS148	PROTECTOR



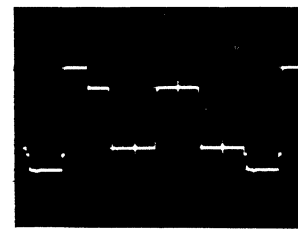
① 3.6Vp-p (H)



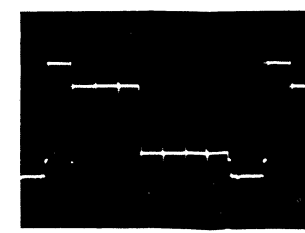
③ 4.0Vp-p (H)



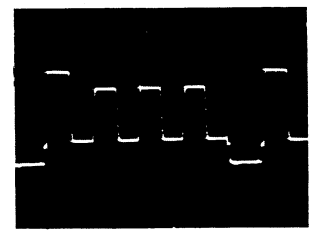
⑤ 3.0Vp-p (H)



② 60Vp-p (H)



④ 66Vp-p (H)



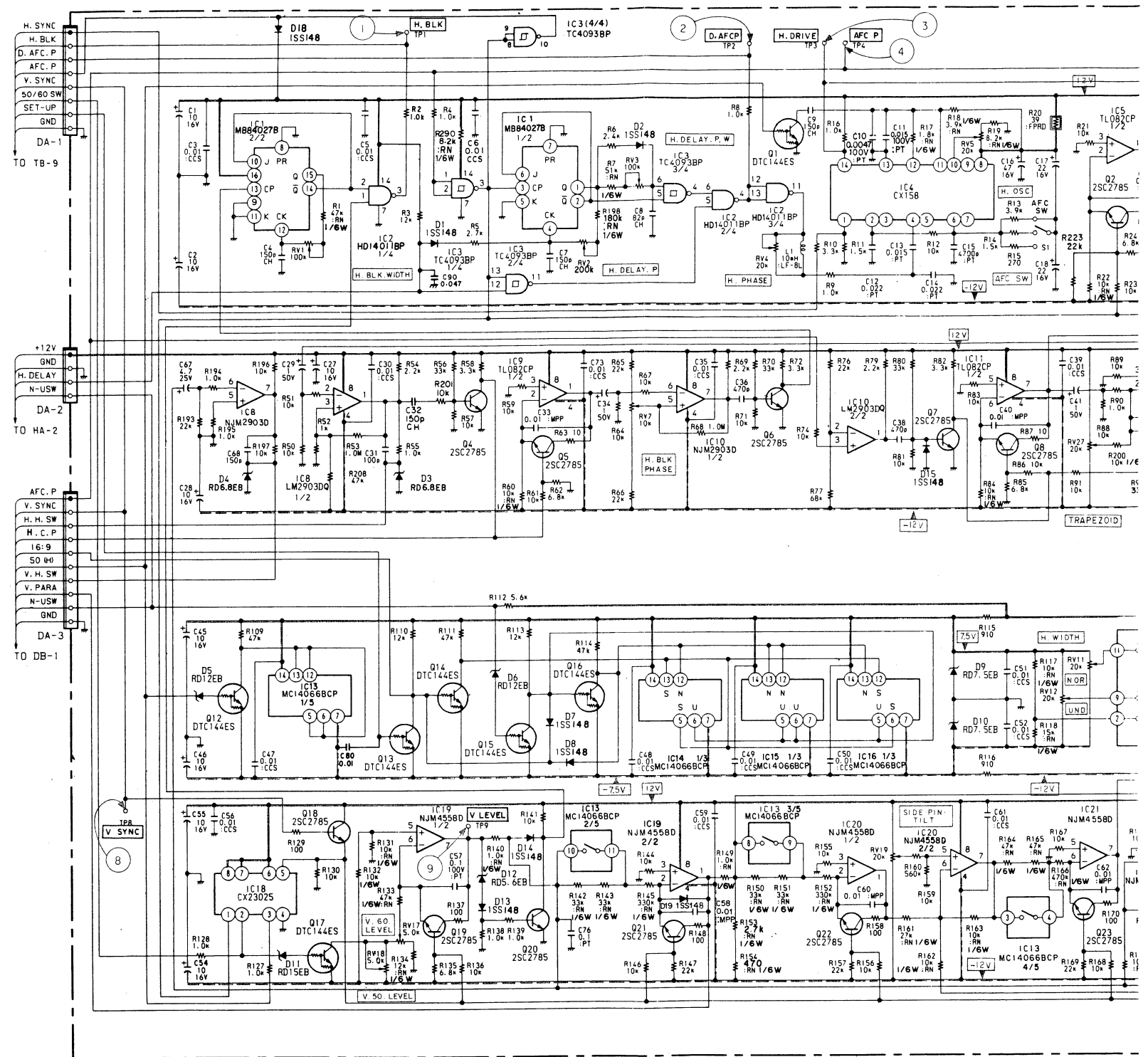
⑥ 54Vp-p (H)

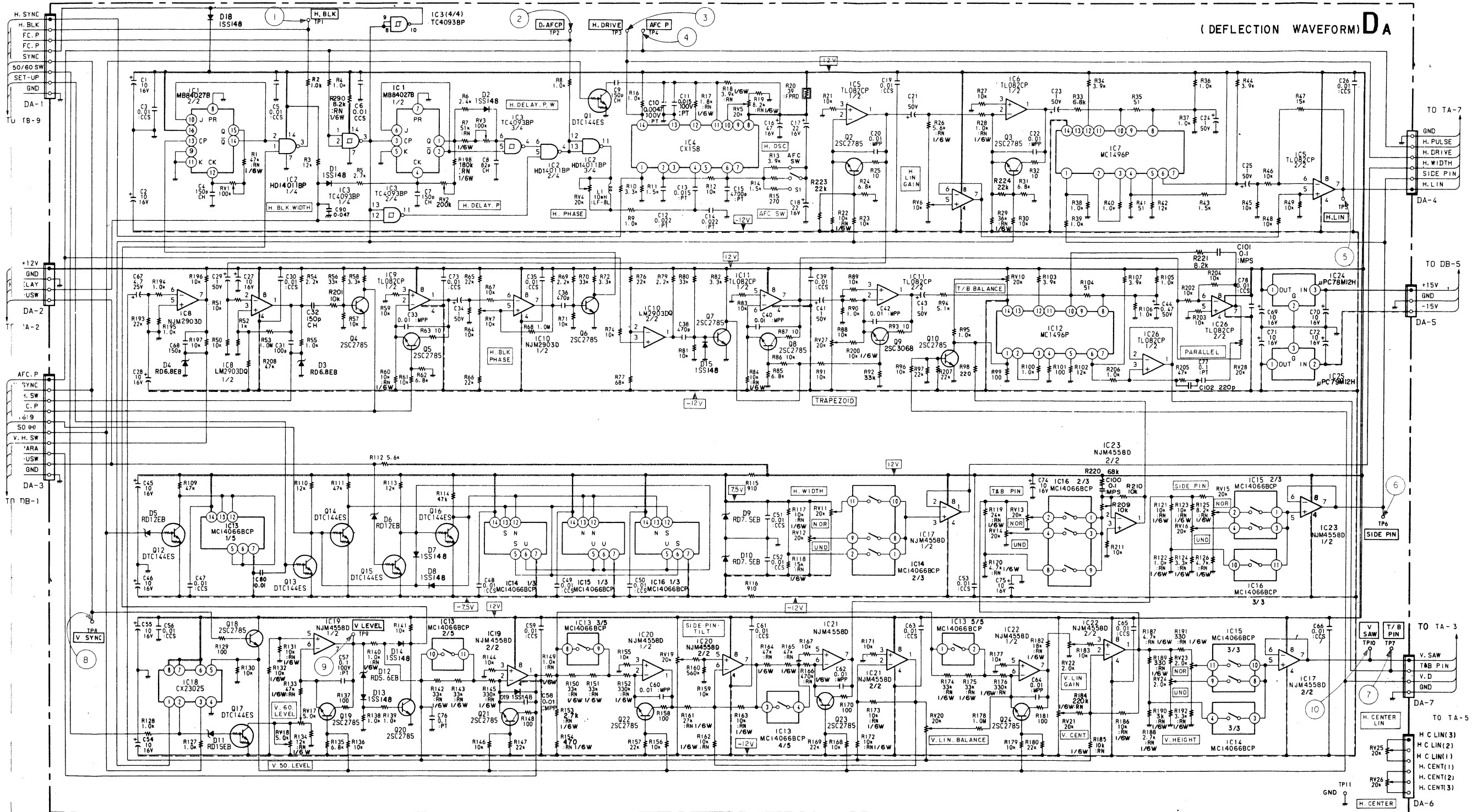
DA BOARD

IC1	MB84027B	H. BLK. WIDTH
2	HD14011BP	H. DELAY. POSITION
3	TC4093BP	BUFFER
4	CX-158	H. OSC AFC
5	TL082CP	H. LIN. GEN.
6	TL082CP	H. LIN. GEN.
7	MC1496P	H. LIN. MOD.
8	NJM2903D	1/2H, 1/2V. GEN.
9	TL082CP	H. BLK. PHASE
10	NJM2903D	T & B. H. PHASE
11	TL082CP	T & B. PIN. GEN.
12	MC1496P	T & B. PIN. MOD.
13	uPD4066BC	50/60 SW.
14	uPD4066BC	DEF. LEVEL. SW
15	uPD4066BC	DEF. LEVEL. SW
16	uPD4066BC	DEF. LEVEL. SW
17	NJM4558D	BUFFER
18	NJM4558D	50/60 SELECTOR
19	NJM4558D	V. SAWTOOTH. GEN.
20	NJM4558D	SIDE. PIN. GEN.
21	NJM4558D	SIDE. PIN. GEN.
22	NJM4558D	V. SAWTOOTH. GEN.
23	NJM4558D	BUFFER
24	uPC78M12H	+12V REG.
25	uPC79M12H	-15V REG.
26	TL082CP	BUFFER
Q1	DTC144ES	H. OSC. SW
2	2SC2785	H. LIN. GEN.
3	2SC2785	H. LIN. GEN.
4	2SC2785	1/2H. P. GEN.
5	2SC2785	H. BLK. GEN.
6	2SC2785	H. BLK. GEN.
7	2SC2785	T & B. PIN. PHASE

8	2SC2785	T & B. PIN. GEN.
9	2SC3068	T & B. PIN. GEN.
10	2SC2785	T & B. PIN. MOD.
12	DTC144ES	50/60 SW
13	DTC144ES	SCAN. SW
14	DTC144ES	SCAN. SW
15	DTC144ES	SCAN. SW
16	DTC144ES	SCAN. SW
17	DTC144ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2785	V. SAW. GEN
20	2SC2785	V. SAW. CLIP
21	2SC2785	SIDE PIN GEN
22	2SC2785	SIDE PIN GEN
23	2SC2785	SIDE PIN GEN
24	2SC2785	V. SAW GEN.
31	DTC144ES	V. LIN GEN
D1	1SS148	H. DELAY SW
2	1SS148	H. DELAY SW
3	RD6.8EB3	CLIPPER
4	RD6.8EB3	CLIPPER
5	RD12E-B3	50/60 SW
6	RD12E-B3	SCAN SW
7	1SS148	SCAN SW
8	1SS148	SCAN SW
9	RD7.5E-B3	+7.5V REG.
10	RD7.5E-B3	-7.5V REG.
11	RD15E-B3	50/60 SW.
12	RD5.6E-B2	V. SAW. CLIP
13	1SS148	V. SAW. CLIP
14	1SS148	V. SAW. CLIP
15	1SS148	AFC. CLIP
18	1SS148	PROT
19	1SS148	PROT

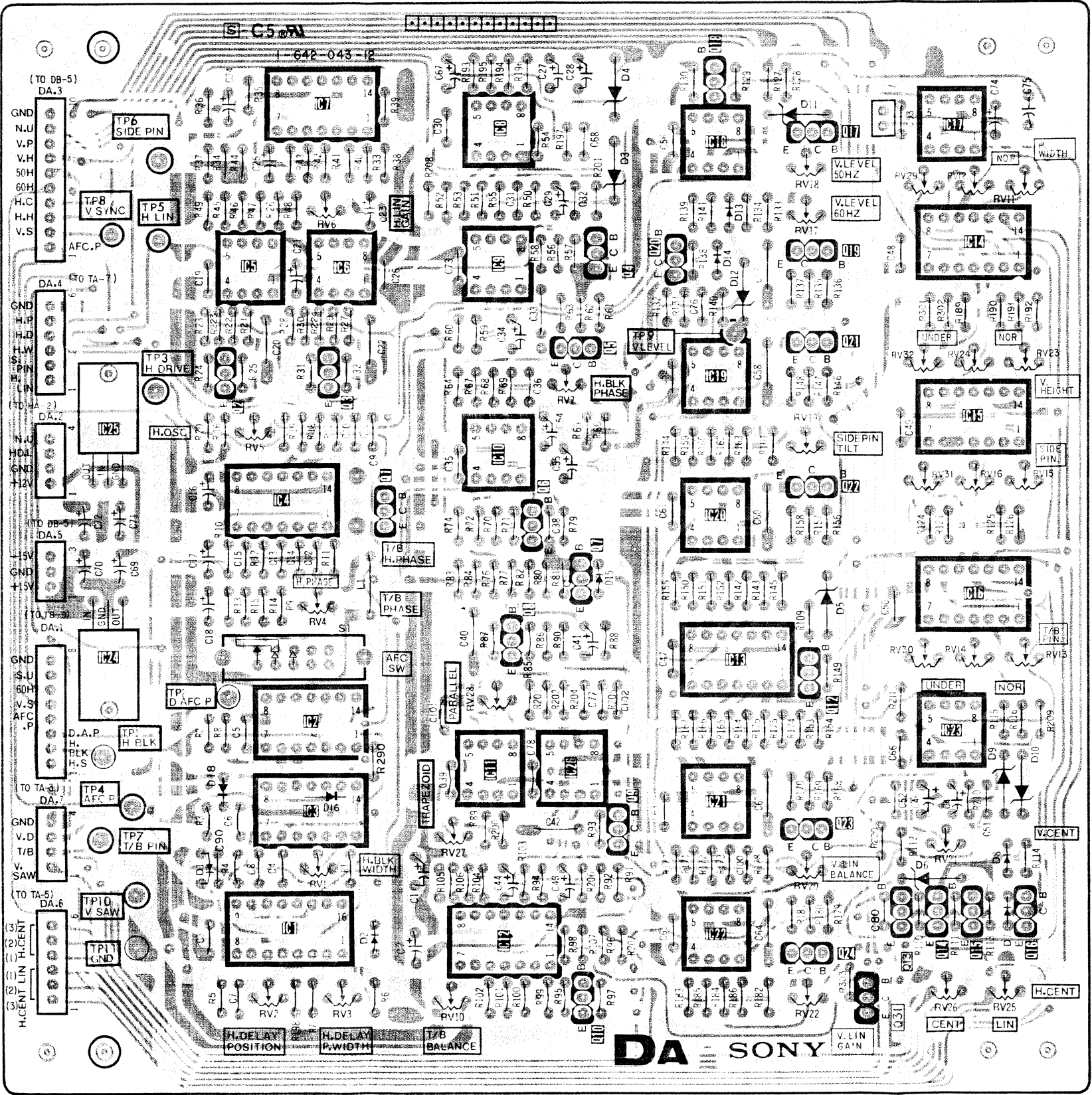
DA board (DEFLECTION WAVEFORM)





DA board (DEFLECTION WAVEFORM)

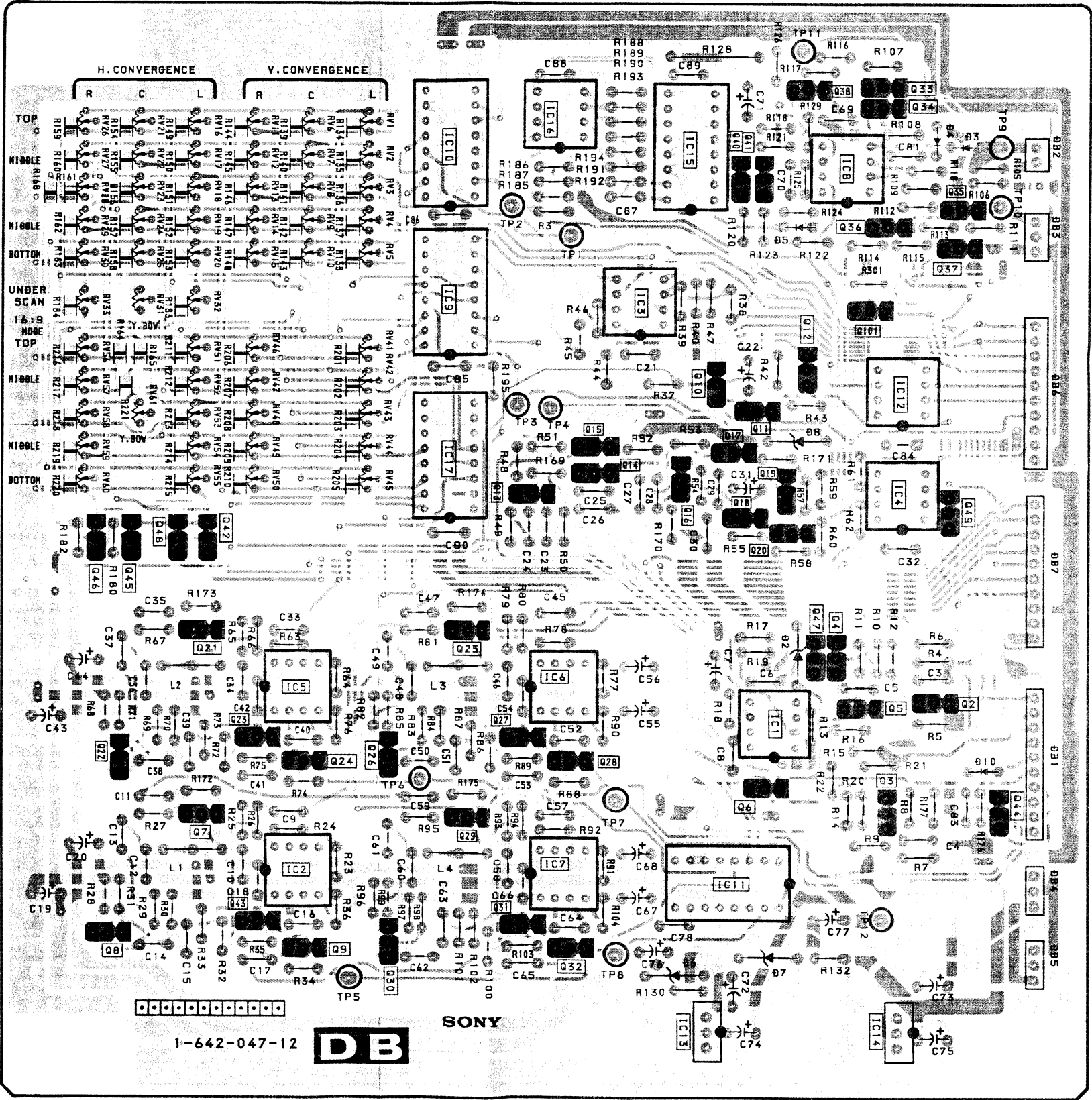
IC	Q	D	TP	ADJ
7	18	4	TP6	RV18
8 18 17	17	11	RV29 RV12 RV11	
		3	RV6 RV17	
		13	TP8	
14	19	14	TP5	
5, 6, 9	4, 20	12		
	21		TP9	
	2 3		RV32 RV24 RV23	
19			TP3	RV7
25 15				
			RV5	
10				RV19
			RV31 RV16 RV15	
4	22			
20	6			
	7	5	RV4	
16				
	8		RV30 RV14 RV13	
13			TP2	
24	12		RV28	
2	23			
			TP1	
11, 26		9		
3 21		16 10	TP4	
		18		
	23		TP7	RV27 RV21
		8		
		1		RV1 RV20
	11	6	TP10	
	13, 14	7		
	15, 16			
1 12 22		2	TP11	
	24			
	31			
	10		RV2 RV10 RV26	
			RV3 RV22 RV25	



• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

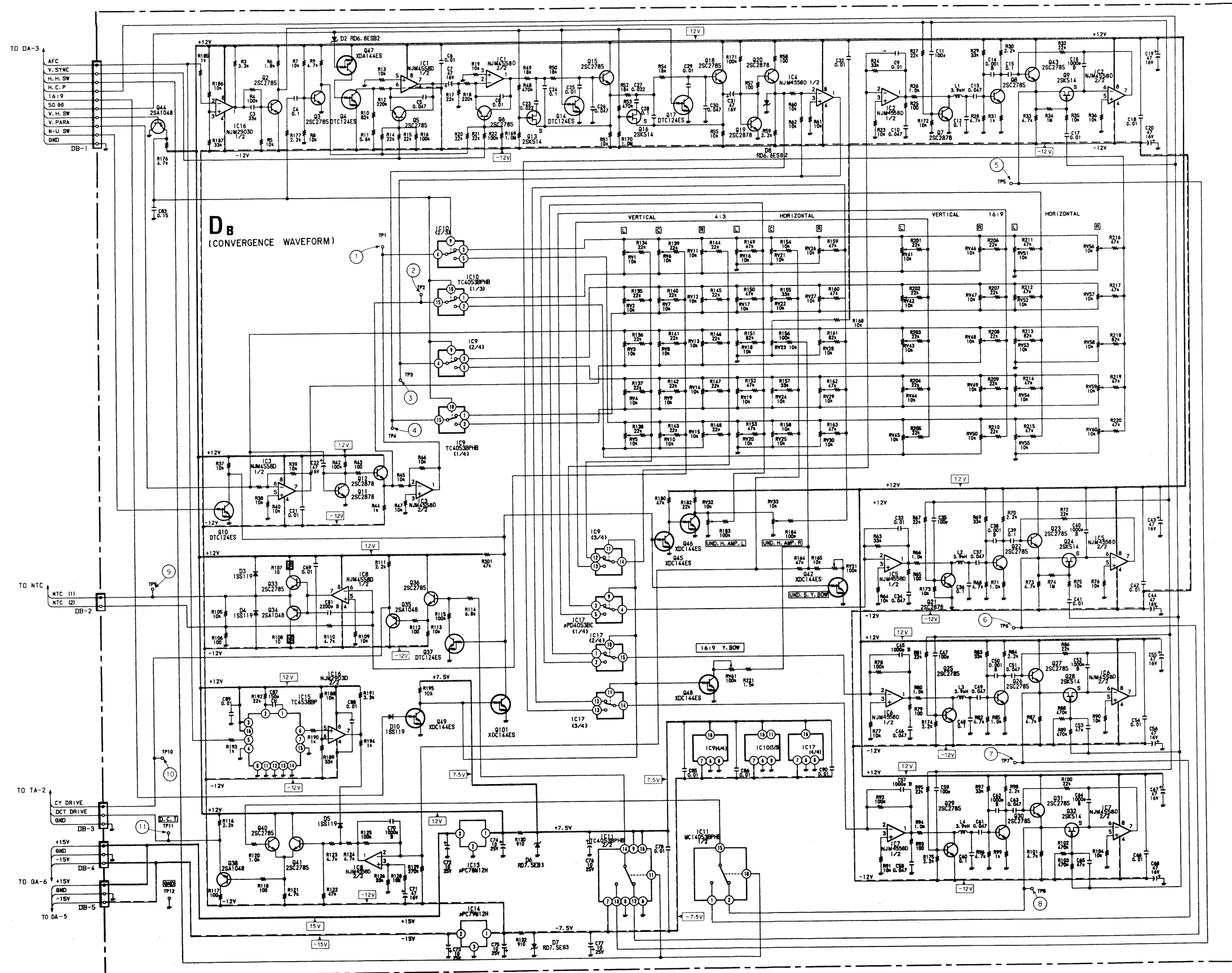
DB board (CONVERGENCE WAVEFORM)

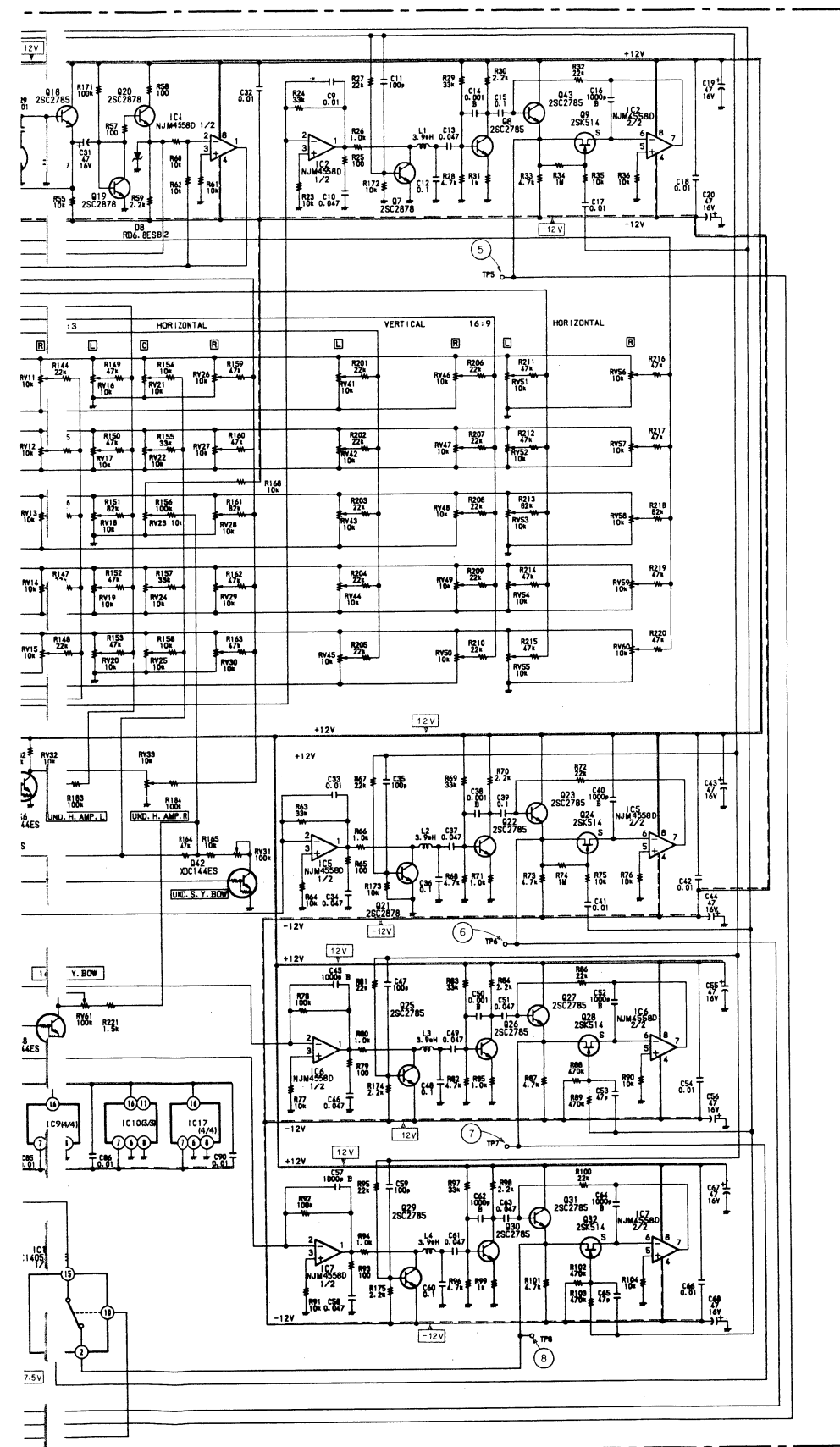
IC	Q	D	TP	ADJ
			11	
16	38 33 34			26 21 16 11 6 1
10 15		4 3	9	27 22 17 12 7 2
8	40 41 35		2 10	28 23 18 13 8 3
	36	5	1	29 24 19 14 9 4
	37			30 25 20 15 10 5
9 3	101			33 31 32
	10 12			56 51 46 41
	11			57 52 47 42
		3 4		58 61 53 48 43
17	15 17	8		59 54 49 44
4	13 14 16 19			60 55 50 45
	18 20 49			
	46 45 48 42			
	21 25 47 4	2		
5 6	5 2			
1	23 27			
	22 24 26 28	10		
	6		6 7	
	7 29 3 44			
2 7				
11				
	43 31		12	
	8 9 30 32	7	8	
		6	5	
13 14				



• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

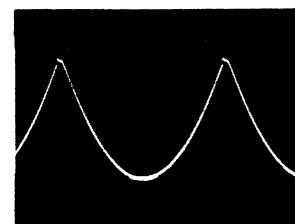
DB board (CONVERGENCE WAVEFORM)



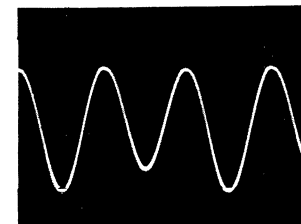


IC 1	NJM4558D	2XV GEN
2	NJM4558D	AMP & CLAMP
3	NJM4558D	INVERTER
4	NJM4558D	INVERTER
5	NJM4558D	AMP & CLAMP
6	NJM4558D	AMP & CLAMP
7	NJM4558D	AMP & CLAMP
8	NJM4558D	AMP
9	TC4053BPH	SW
10	TC4053BPH	SW
11	TC4053BPH	1/2HV. SW
12	NJM4558D	BUFFER
13	uPC78M12H	+12V REG.
14	uPC79M12H	-12V REG.
15	TC4538BP	H.CONV CLAMP
16	NJM2903D	INVERTER
17	TC4053BPH	H. PARA GEN & CLAMP
Q 2	2SC2785	H. SW
3	2SC2785	2XV. PULSE GEN
4	DTCT24ES	50/60 SW
5	2SC2785	2XV SW
6	2SC2785	2XV SW
7	2SC2785	H. SW
8	2SC2785	AMP
9	2SK514	H. CLAMP
10	DTCT24ES	N/U SW
11	2SC2785	CLAMP
12	2SC2785	BUFFER
13	2SK514	50/60 SW
14	DTCT24ES	50/60 SW
15	2SC2785	50/60 SW
16	2SK514	50/60 SW
17	DTCT24ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2785	CLAMP

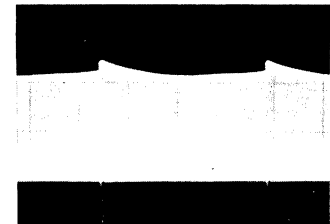
Q 20	2SC2878	BUFFER
21	2SC2878	H. SW
22	2SC2785	AMP
23	2SC2785	H. CLAMP
24	2SK514	H. CLAMP
25	2SC2785	H. SW
26	2SC2785	AMP
27	2SC2785	H. CLAMP
28	2SK514	H. CLAMP
29	2SC2785	H. SW
30	2SC2785	AMP
31	2SC2785	H. CLAMP
32	2SK514	H. CLAMP
33	2SC2785	N.T.C AMP
34	2SA1175	N.T.C AMP
35	2SA1175	BUFFER
36	2SC2785	BUFFER
37	DTCT24ES	N/U SW
38	2SA1175	BUFFER
40	2SC2785	ADDER
41	2SC2785	ADDER
42	XDC144ES	UND S. Y BOW
43	2SC2785	H. CLAMP
44	2SA1175	BUFFER
45	XDC144ES	UND H. AMP SW
46	XDC144ES	UND H. AMP SW
47	DTA144ES	16:9 SW
48	XDC144ES	16:9 Y BOW
49	DTA144ES	INVERTER
101	DTA144ES	N/U SW
Q 2	RD6.8ESB2	LEVEL SHIFT
3	1SS119	PROTECTOR
4	1SS119	PROTECTOR
5	1SS119	DC STOPPER
6	RD7.5E-B3TN	+7.5V REG.
7	RD7.5E-B3TN	-7.5V REG.
8	RD6.8ESB2	LIMITTER
10	1SS119	DC STOPPER



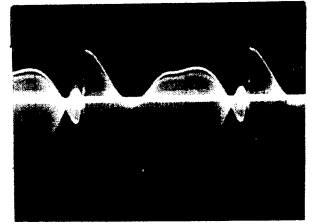
① 4.8Vp-p (V)



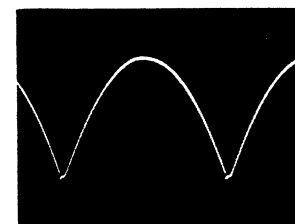
④ 2.5Vp-p (V)



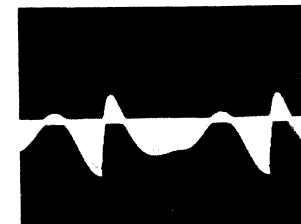
⑦ 2.5Vp-p (V)



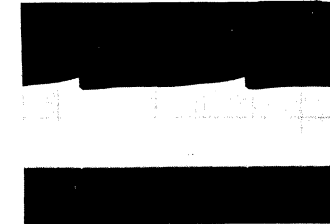
⑩ 0.4Vp-p (V)



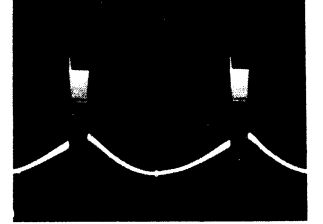
② 4.8Vp-p (V)



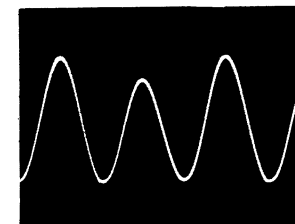
⑤ 0.3Vp-p (V)



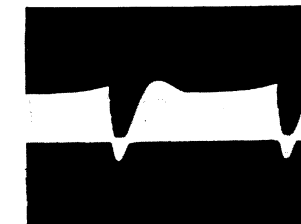
⑧ 1.8Vp-p (V)



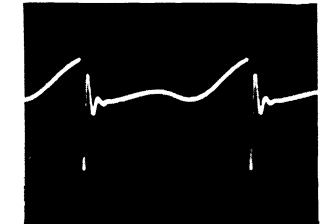
⑪ 5Vp-p (H)



③ 2.5Vp-p (V)



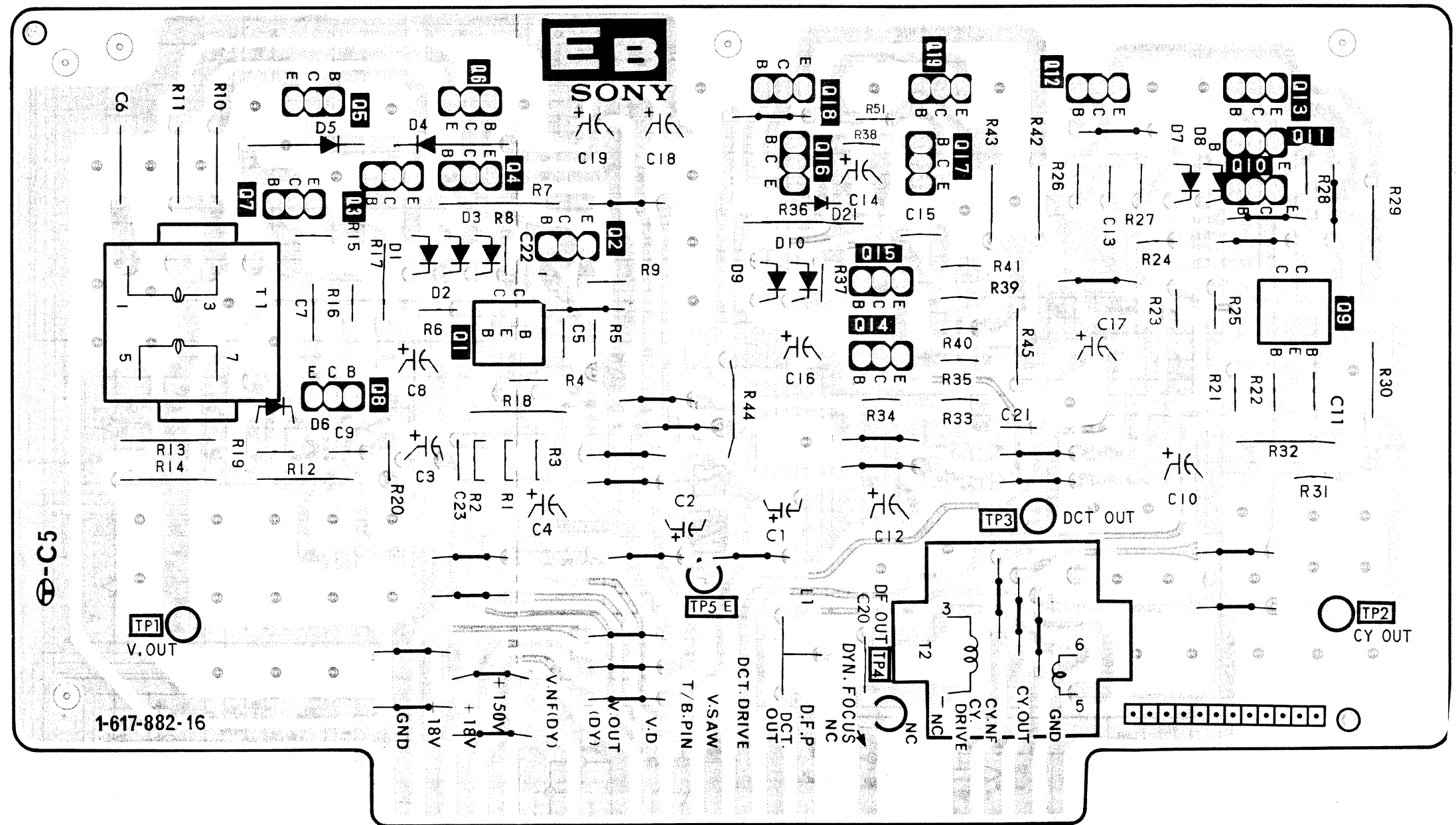
⑥ 0.3Vp-p (V)



⑨ 2.2Vp-p (V)

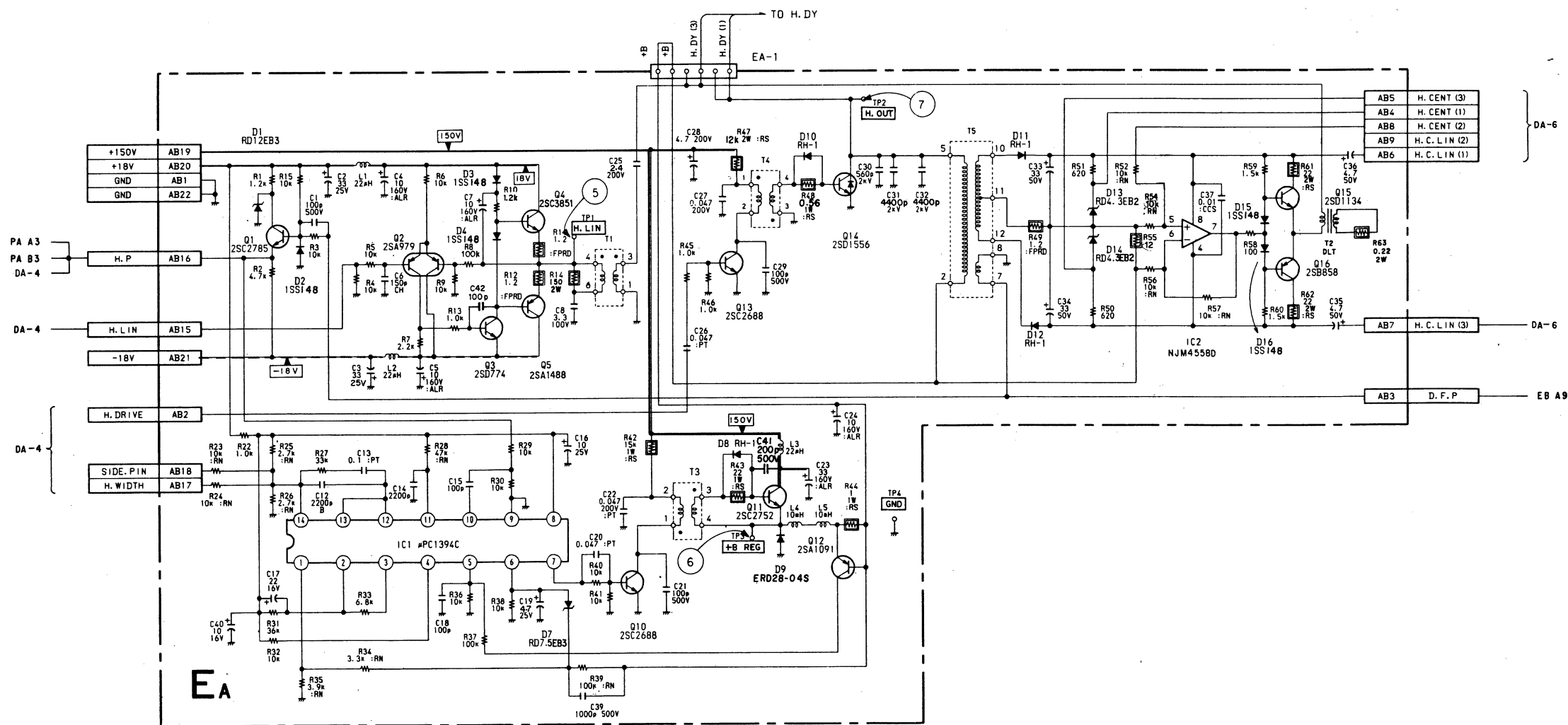
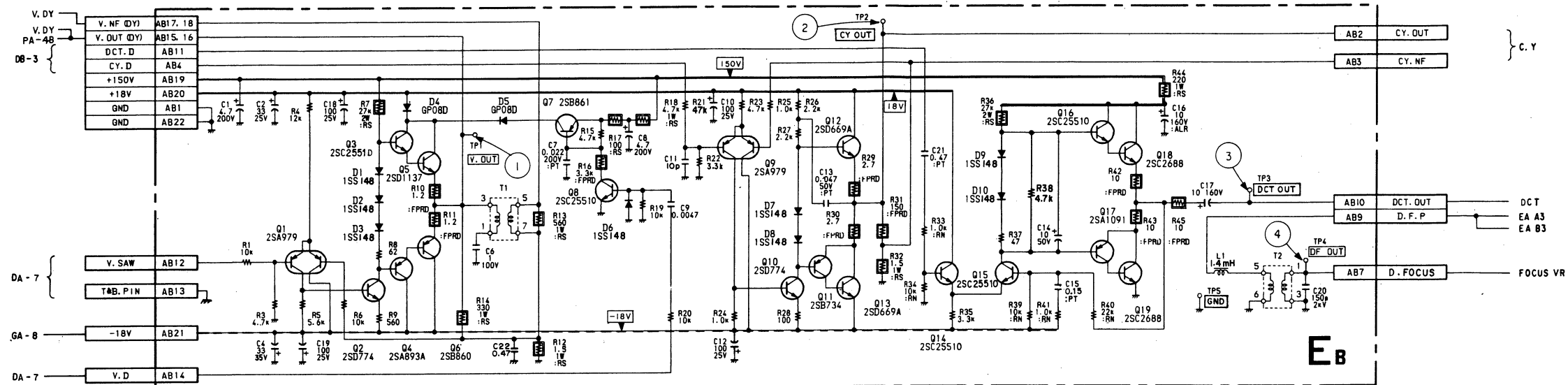
EB board (V OUT)

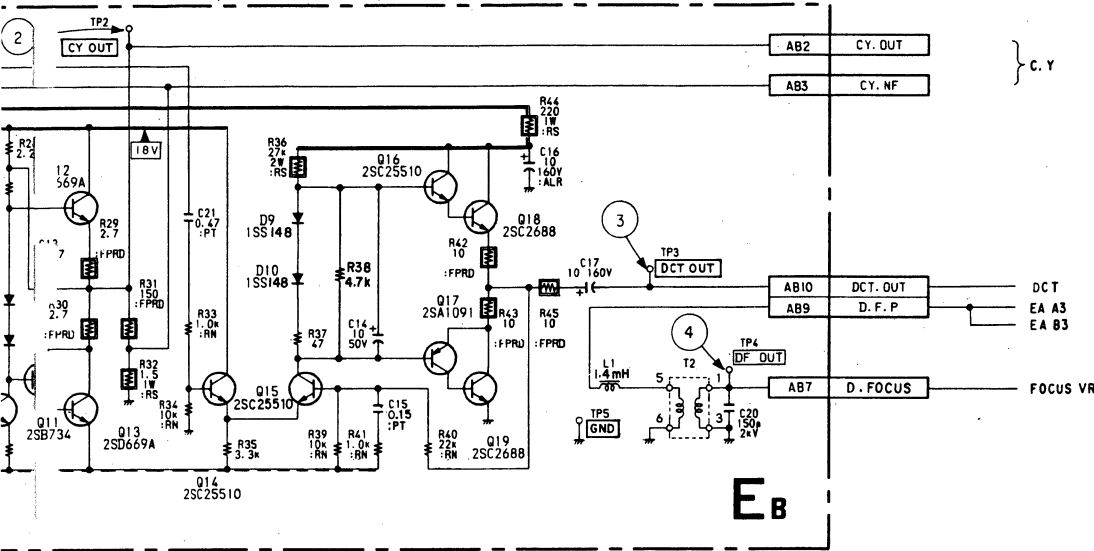
Q		7	5	3	6		18	19	12	13	
		8			4	2	16	17		11	9
D			5		1	2	9	10	21	7	8
		6									
TP							TP5		TP4	TP3	TP2



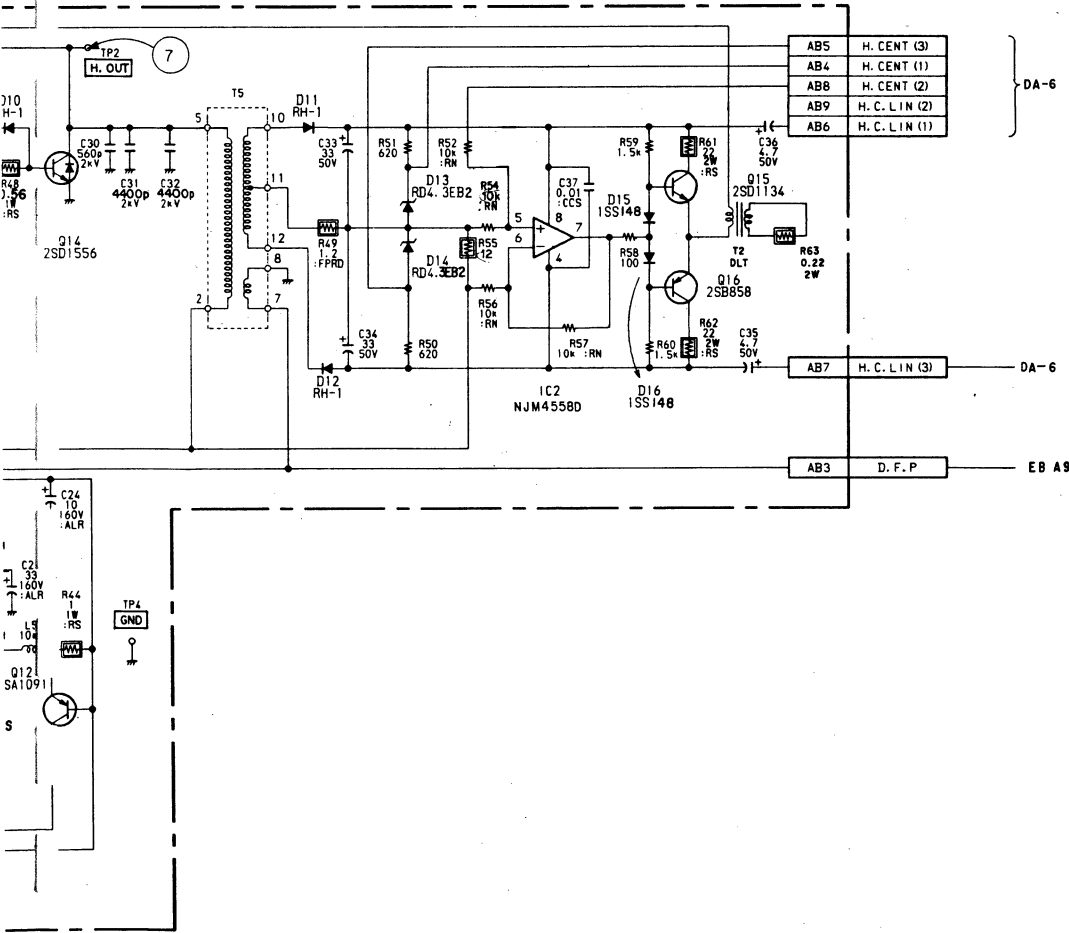
- Pattern from the side which enables seeing.
- Pattern of the rear side.

EA board (H OUT)
EB board (V OUT)





DY

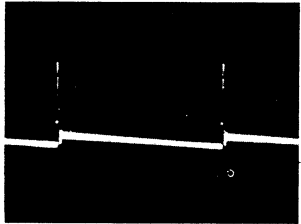


EA BOARD

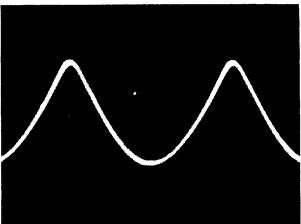
IC1	uPC1394C	P.W.M CONTROL
2	NJM4558D	H.CENT
Q1	2SC2785	H.PULSE BUFFER
2	2SA979	H.LIN AMP
3	2SD774	H.LIN AMP
4	2SC3851	H.LIN AMP OUT
5	2SA1488	H.LIN AMP OUT
10	2SC2688	P.W.M DRIVE
11	2SC2752	P.W.M OUT
12	2SA1091	O.C.P
13	2SC2688	H.DRIVE
14	2SD1556	H.OUT
15	2SD1134	H.CENT
16	2SB858	H.CENT
D1	RD12E-B3	CLIPPER
2	1SS148	PROTECTOR
3	1SS148	BIAS
4	1SS148	BIAS
7	RD7.5E-B3	PROTECTOR
8	RH-1	P.W.M DRIVE
9	ERD28-04S	P.W.M SW
10	RH-1	H.DRIVE
11	RH-1	H.P.RECT.
12	RH-1	H.P.RECT.
13	RD4.3E-B2	+4.3V REG
14	RD4.3E-B2	-4.3V REG
15	1SS148	BIAS
16	1SS148	BIAS

EB BOARD

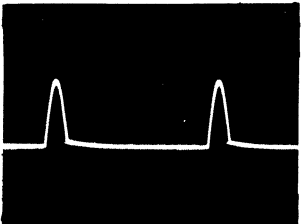
Q1	2SA979	V.AMP
2	2SC3209	V.AMP
3	2SC25510	V.AMP
4	2SA1091	V.AMP
5	2SC32983	V.AMP OUT
6	2SA1306B	V.AMP OUT
7	2SB861	V.RETRACE SW
8	2SC25510	V.RETRACE SW
9	2SA979	CY.AMP
10	2SD774	CY.AMP
11	2SB740	CY.AMP
12	2SD669A	CY.AMP OUT
13	2SD669A	CY.AMP OUT
14	2SC25510	D.C.T AMP
15	2SC25510	D.C.T AMP
16	2SC25510	D.C.T AMP
17	2SA1091	D.C.T AMP
18	2SC2688	D.C.T AMP OUT
19	2SC2688	D.C.T AMP OUT
D1	1SS148	BIAS
2	1SS148	BIAS
3	1SS148	BIAS
4	GP08D	DC.STOPPER
5	GP08D	DC.STOPPER
6	1SS148	PROTECTOR
7	1SS148	BIAS
8	1SS148	BIAS
9	1SS148	BIAS
10	1SS148	BIAS
21	1SS148	PROTECTOR



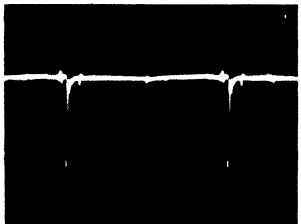
① 80Vp-p (V)



④ 210Vp-p (H)



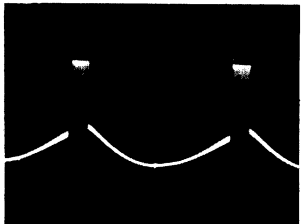
⑦ 650Vp-p (H)



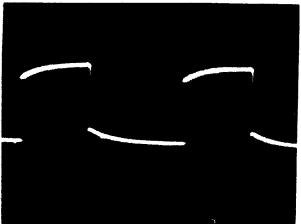
② 20Vp-p (H)



⑤ 34Vp-p (H)



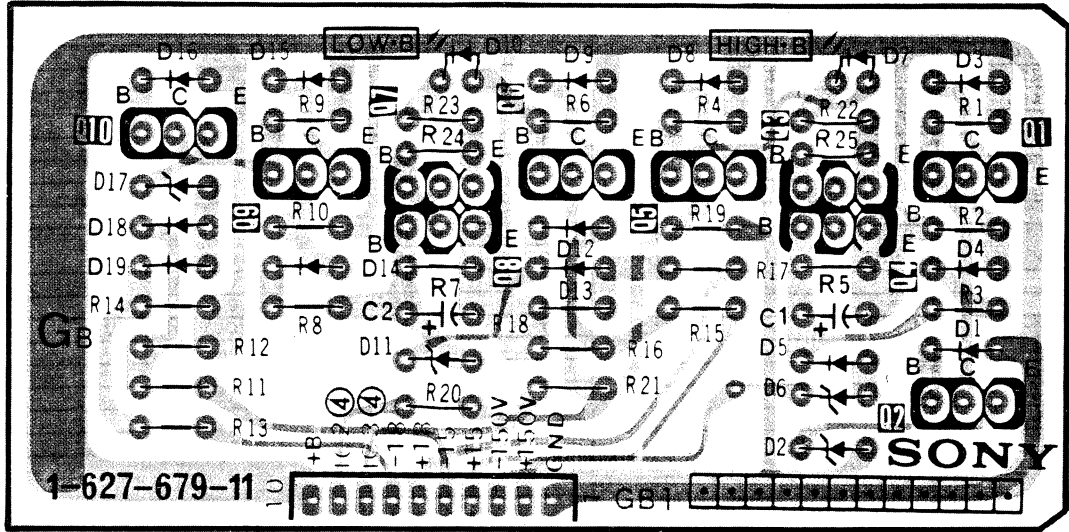
③ 100Vp-p (H)



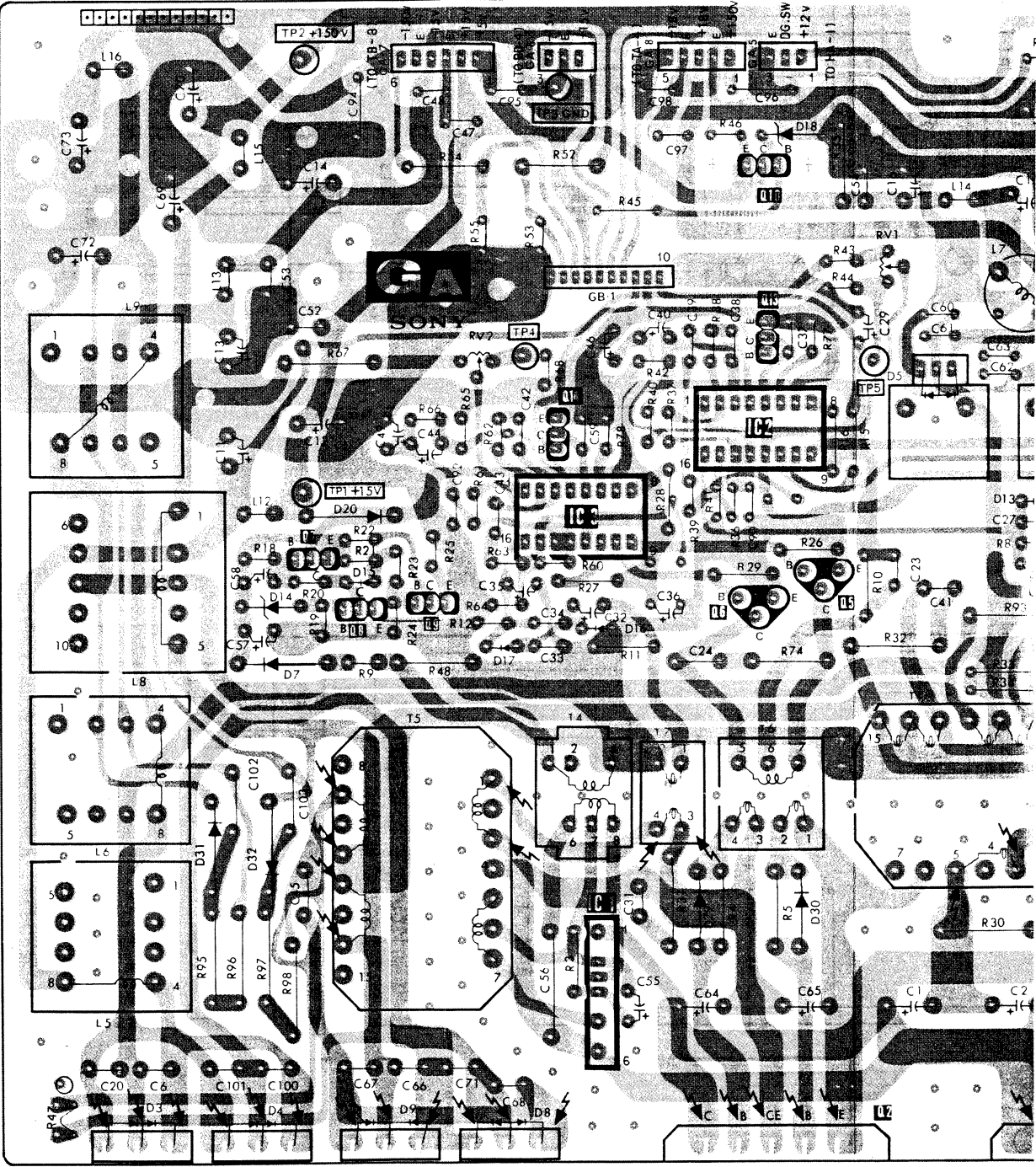
⑥ 160Vp-p (H)

GB board (OVER VOLTAGE PROTECTOR)

GA board (AC RECT, DC REG)

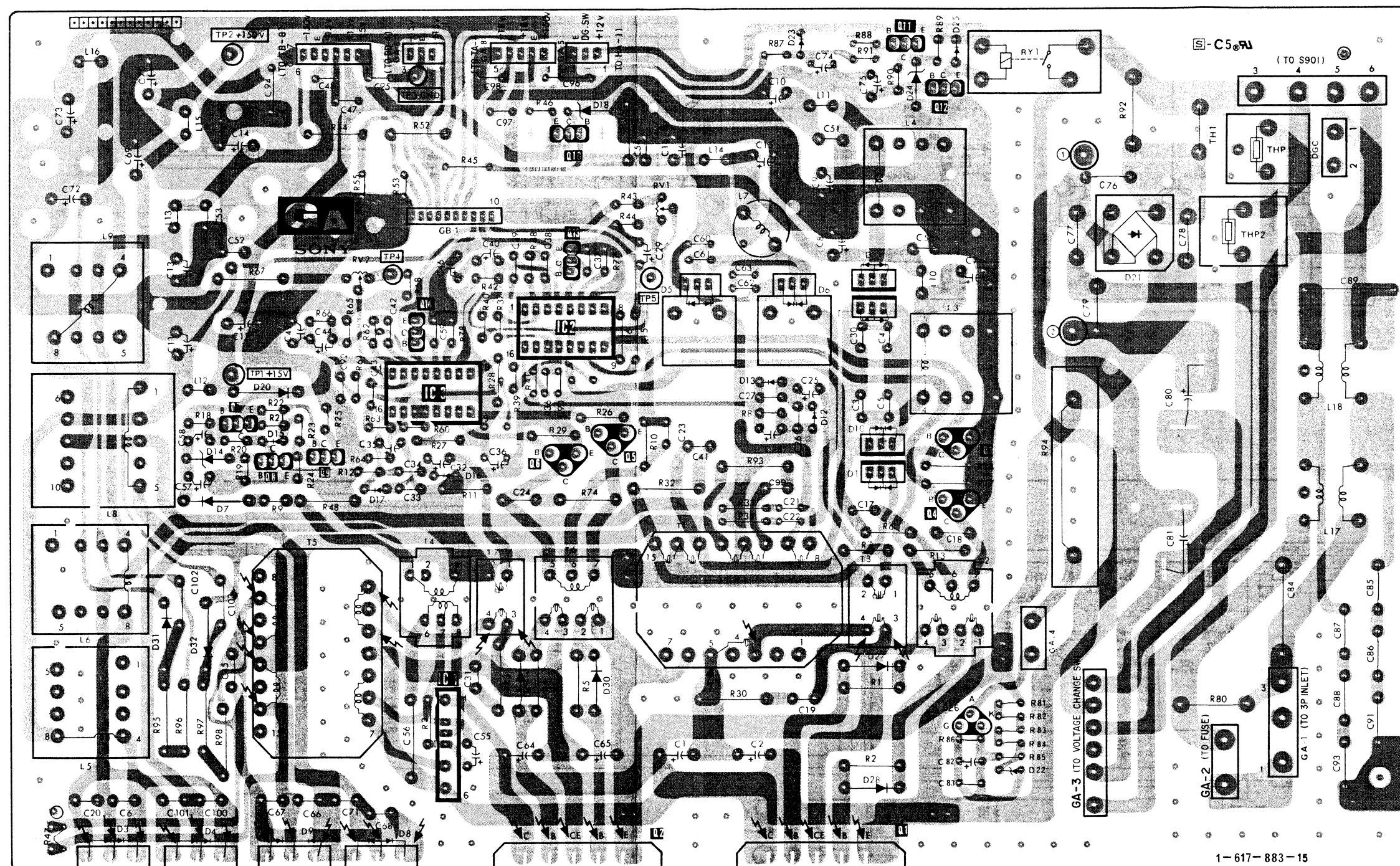


IC	Q	D	ADJ-TP
		23 25	TP2
	11		TP3
	12	18	
	10		
			RV1
		21	
	13	11	RV2 TP4
		5 6	TP5
	2	2	
			TP1
2	14		
3		20 13	
	7	12	
	5	15	
	6	10	
	8	14	
		16	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
		22	
		28	
		3	4
		9	8
1			
	2	1	

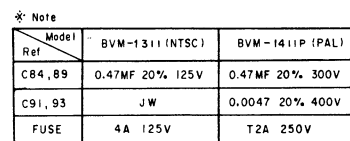


b6 d (AC RECT, DC REG)

	Q	D	ADJ - TP
		23 25	
	11		TP2
	12	24	TP3
	10	18	
			RV I
		21	
	13	11	RV2 TP4 TP5
		5 6	
	14	2	
3			TP I
		20 13	
	7		
	5 6 3	15 12	
	9 8	10	
		14 16 17	
		7	
		31,32	
		29 27	
		30	
		26	
		22	
		28	
	2 1	3 4 9 8	



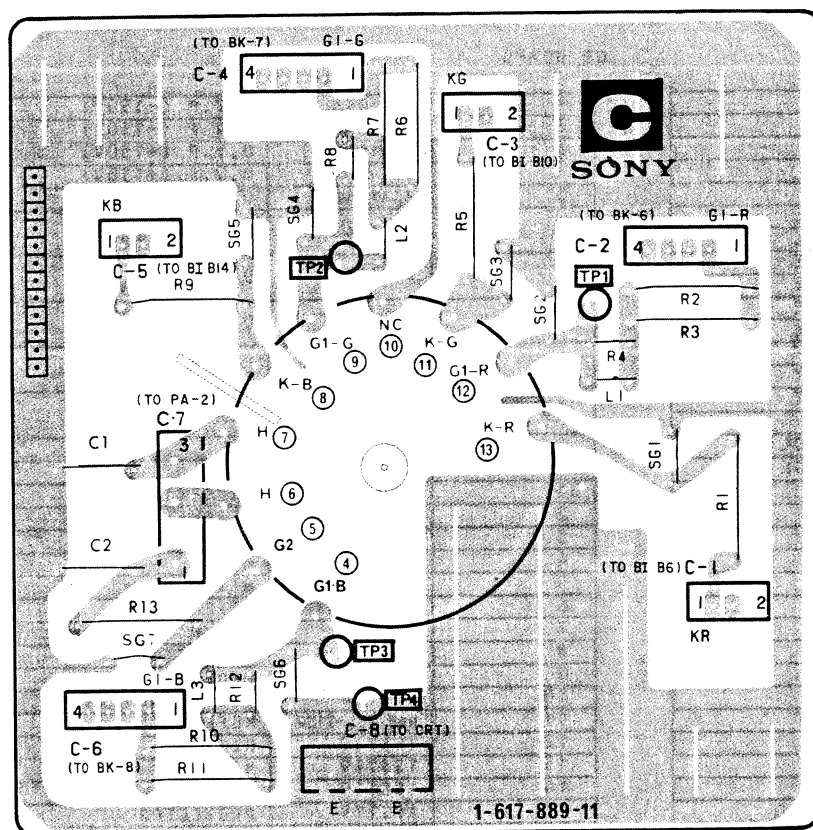
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.



GB BOARD

Q1	2SA1048	0.V.P (-150V)
2	2SC2785	0.V.P (-150V)
3	2SA1048	0.V.P (+150V)
4	2SC2785	0.V.P (+150V)
5	2SA1048	0.V.P (+150V)
6	2SA1048	0.V.P (+15V +18V)
7	2SA1048	0.V.P (+15V +18V)
8	2SC2785	0.V.P (+15V +18V)
9	2SA1048	0.V.P (-15V -18V)
10	2SC2785	0.V.P (-15V -18V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	0.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	0.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

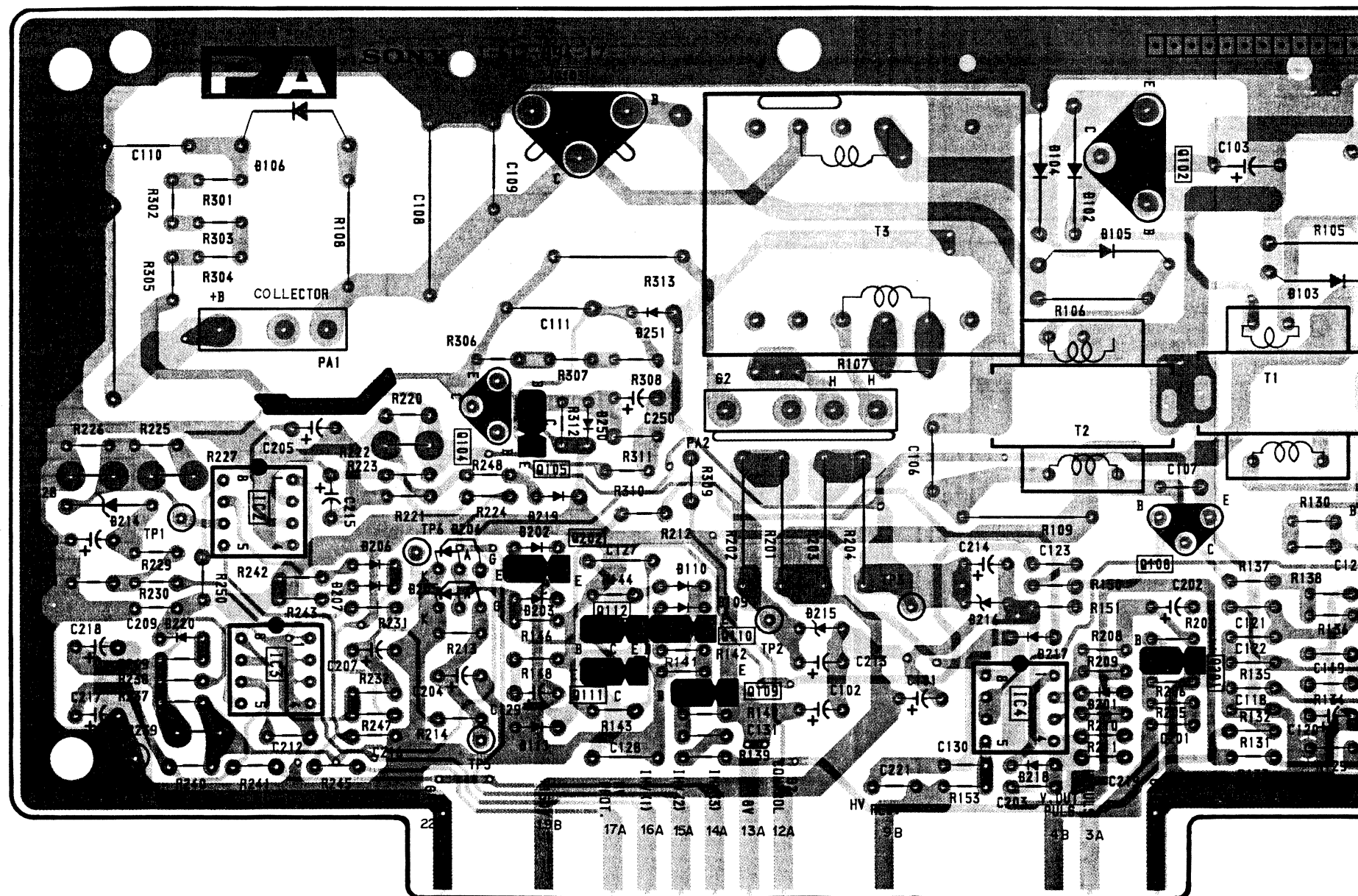
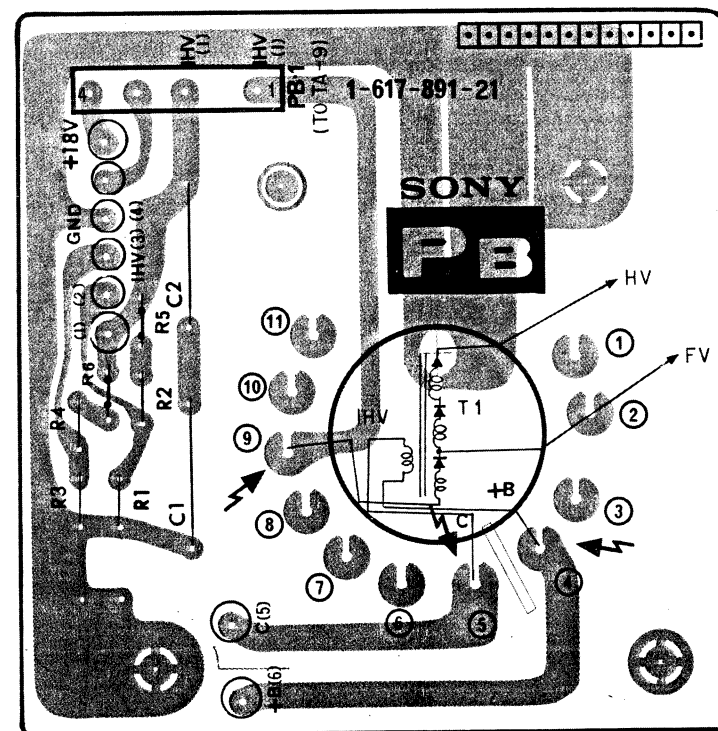
C board (CRT SOCKET)



PA board (HIGH VOLTAGE PROTECTOR)

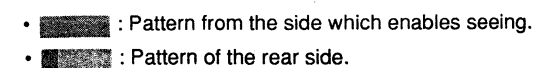
IC	2		3		4		103		102		108		103	
Q	104		105		112		110		109		201		103	
D	214		220		206		204		202		219		250	
TP	4		1		6		5		2		3		103	
RV														

PB board (FBT)



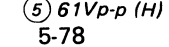
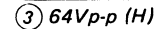
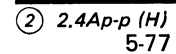
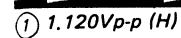
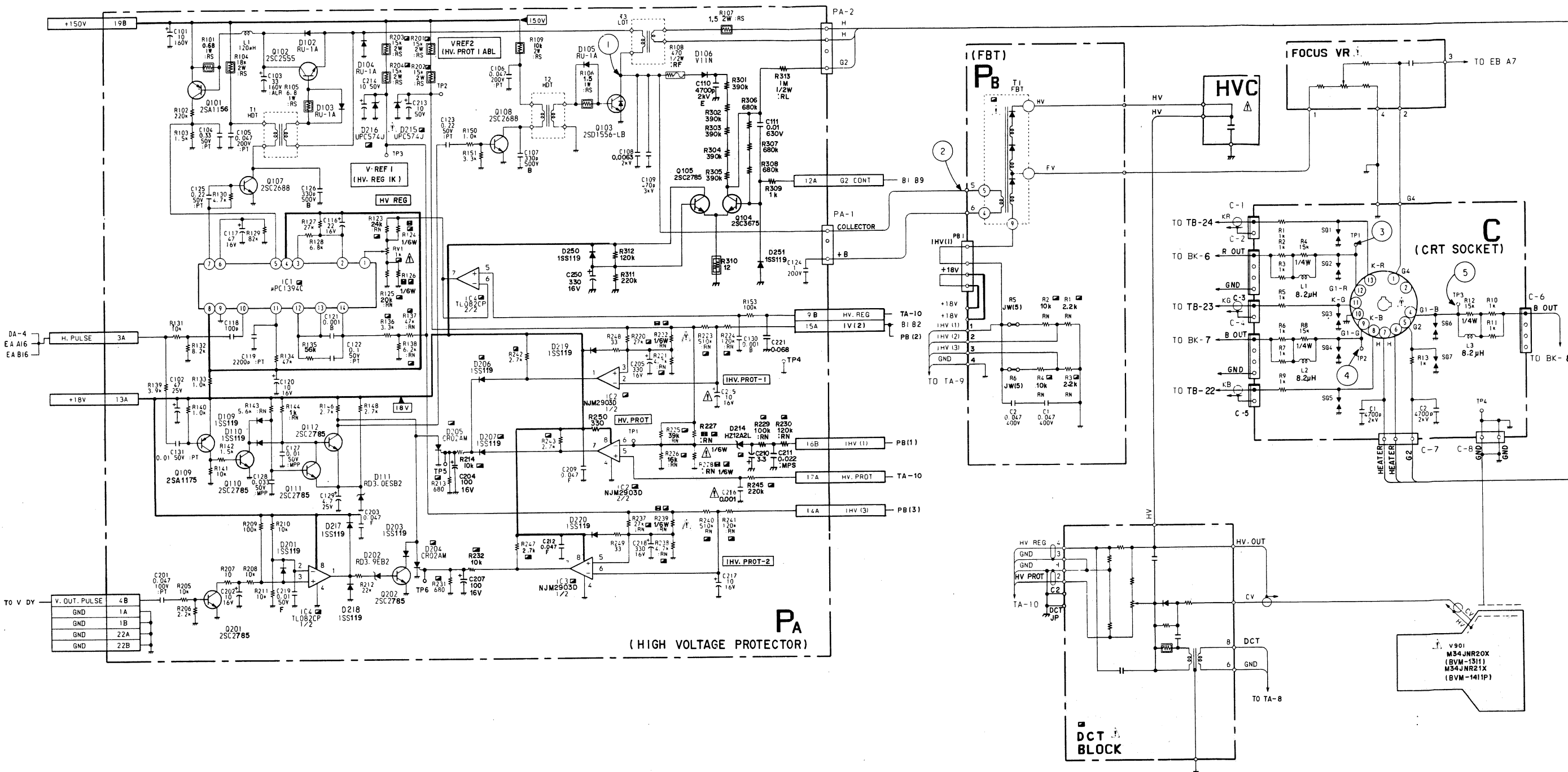
PA BOARD

IC1	uPC1394C	P.W.M CONTROL
2	NJM2903D	COMPARATOR
3	NJM2903D	COMPARATOR
4	TLO82CP	BUFFER & COMPARATOR
Q101	2SA1156	O.V.P
102	2SC2555	DC-DC CONV.
103	2SD1556	HV CONV.
104	2SC3675	G2 REGULATOR
105	2SC2785	G2 REGULATOR
107	2SC2688	DC-DC CONV. DRIVE
108	2SC2688	HV CONV. DRIVE
109	2SA1175	HV CONV. DRIVE
110	2SC2785	HV CONV. DRIVE
111	2SC2785	HV CONV. DRIVE
112	2SC2785	HV CONV. DRIVE
201	2SC2785	CRT PROTECTOR
202	2SC2785	CRT PROTECTOR
D102	RU-1A	DC-DC CONV.
103	RU-1A	DC-DC CONV.
104	RU-1A	DC-DC CONV.
105	RU-1A	HV CONV. DRIVE
106	V11N	RECTIFIER
107	RD6.2EB2	G2 CONTROL
109	1SS119	HV CONV. DRIVE
110	1SS119	HV CONV. DRIVE
111	RD3.0ESB2	HV CONV. DRIVE
201	1SS119	PROTECTOR
202	RD3.9EB2	CRT PROTECTOR
203	1SS148	CRT PROTECTOR
204	CR02AM	PROTECTOR
205	CR02AM	PROTECTOR
206	1SS119	MIX
207	1SS119	MIX
214	HZ1A2L	HV. PROT
215	uPC574J	HV PROT. REF.
216	uPC574J	HV PROT. REF.
217	1SS119	PROT
218	1SS119	PROT
219	1SS119	PROT
220	1SS119	PROT
250	1SS119	PROT
251	1SS119	PROT



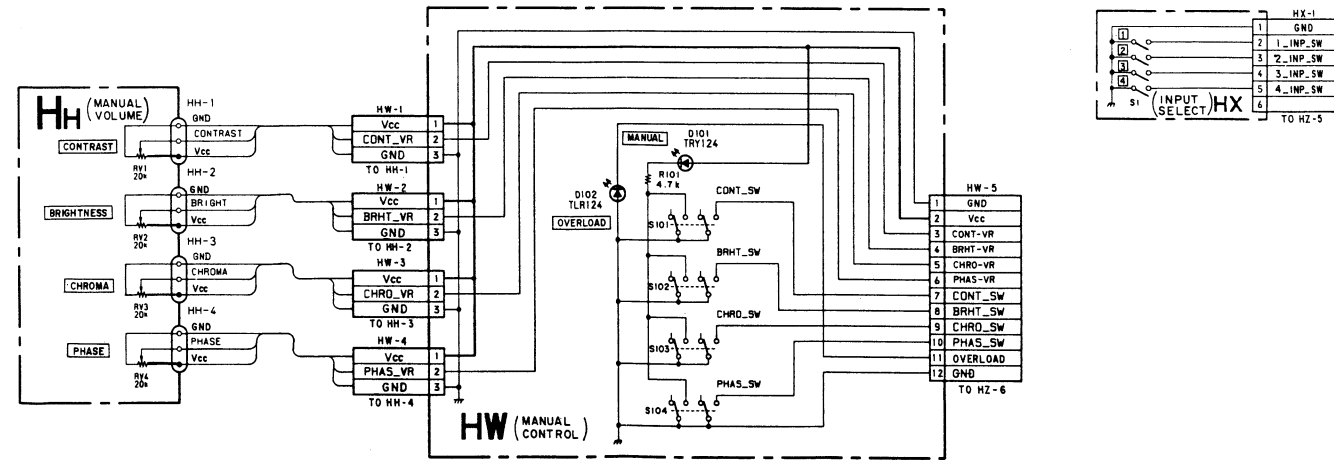
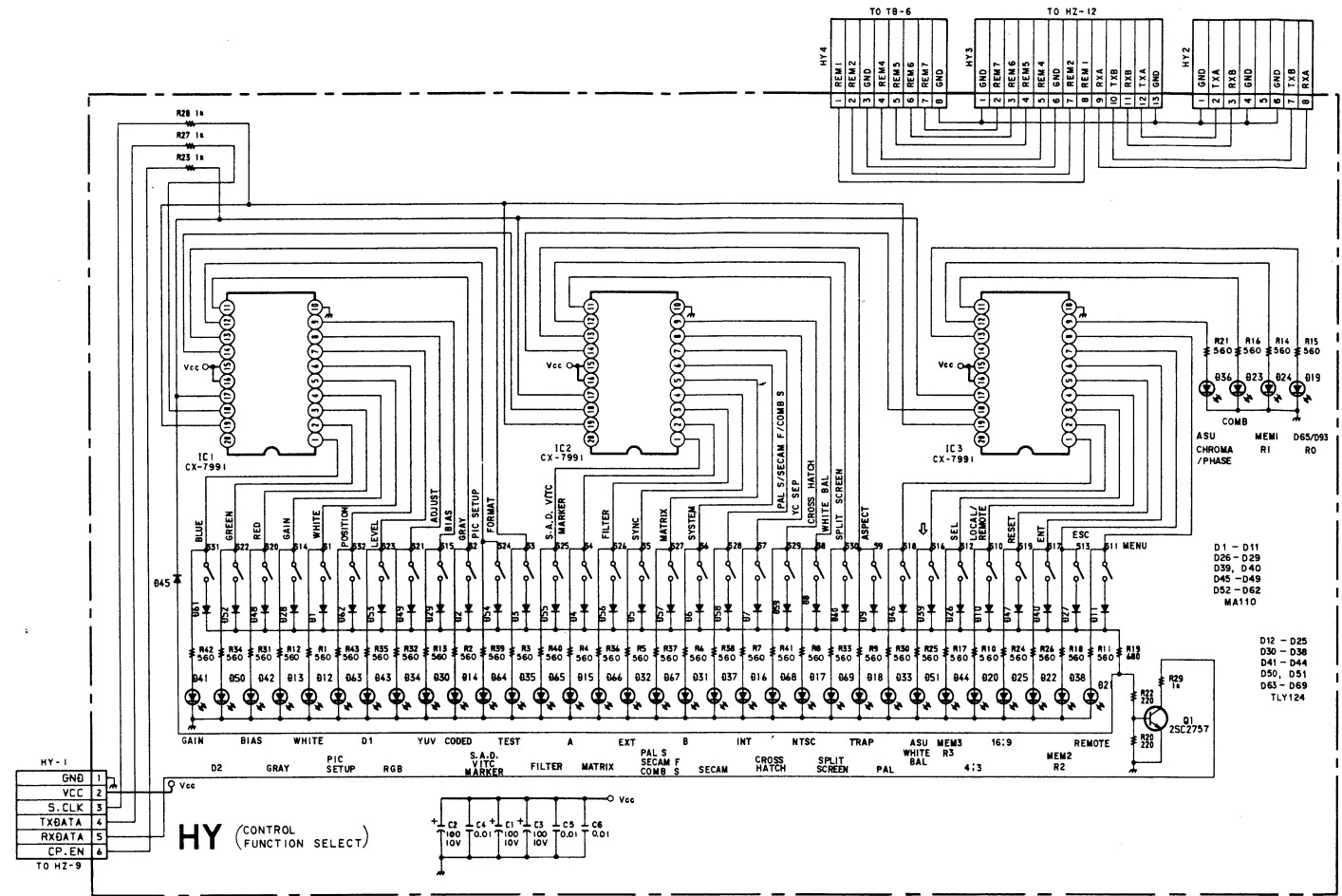
C, PA, PB

PB board (FBT)

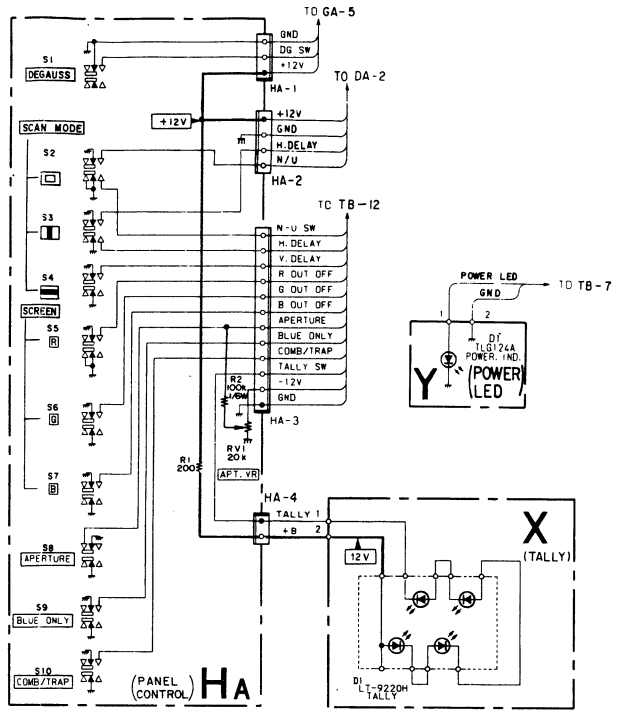


HA, HH, HW, HX, HY, X, Y HA, HH, HW, HX, HY, X, Y

HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), X board (TALLY), Y board (POWER LED)



HW BOARD		
D101	TLR124	INDICATOR
102	TLR124	INDICATOR



X BOARD

D1	LT-9220H	TALLY LAMP
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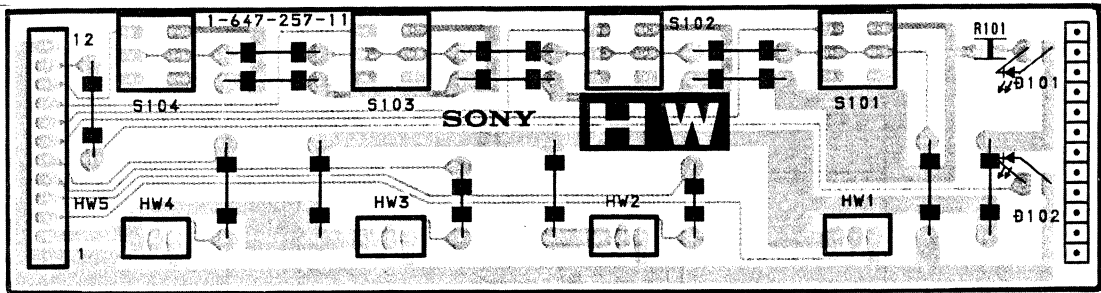
HY BOARD

IC	CX-7991	KEY SCAN	D 35	TLY124	INDICATOR
2	CX-7991	KEY SCAN	36	TLY124	INDICATOR
3	CX-7991	KEY SCAN	37	TLY124	INDICATOR
Q 1	2SC2757	KEY DETECTION	38	TLY124	INDICATOR
D 1	MA110	PROTECTION	39	MA110	PROTECTION
2	MA110	PROTECTION	40	MA110	PROTECTION
3	MA110	PROTECTION	41	TLY124	INDICATOR
4	MA110	PROTECTION	42	TLY124	INDICATOR
5	MA110	PROTECTION	43	TLY124	INDICATOR
6	MA110	PROTECTION	44	TLY124	INDICATOR
7	MA110	PROTECTION	45	MA110	PROTECTION
8	MA110	PROTECTION	46	MA110	PROTECTION
9	MA110	PROTECTION	47	MA110	PROTECTION
10	MA110	PROTECTION	48	MA110	PROTECTION
11	MA110	PROTECTION	49	MA110	PROTECTION
12	MA110	PROTECTION	50	TLY124	INDICATOR
13	TLY124	INDICATOR	51	TLY124	INDICATOR
14	TLY124	INDICATOR	52	MA110	PROTECTION
15	TLY124	INDICATOR	53	MA110	PROTECTION
16	TLY124	INDICATOR	54	MA110	PROTECTION
17	TLY124	INDICATOR	55	MA110	PROTECTION
18	TLY124	INDICATOR	56	MA110	PROTECTION
19	TLY124	INDICATOR	57	MA110	PROTECTION
20	TLY124	INDICATOR	58	MA110	PROTECTION
21	TLY124	INDICATOR	59	MA110	PROTECTION
22	TLY124	INDICATOR	60	MA110	PROTECTION
23	TLY124	INDICATOR	61	MA110	PROTECTION
24	TLY124	INDICATOR	62	MA110	PROTECTION
25	TLY124	INDICATOR	63	TLY124	INDICATOR
26	MA110	PROTECTION	64	TLY124	INDICATOR
27	MA110	PROTECTION	65	TLY124	INDICATOR
28	MA110	PROTECTION	66	TLY124	INDICATOR
29	MA110	PROTECTION	67	TLY124	INDICATOR
30	TLY124	INDICATOR	68	TLY124	INDICATOR
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33	TLY124	INDICATOR			
34	TLY124	INDICATOR			

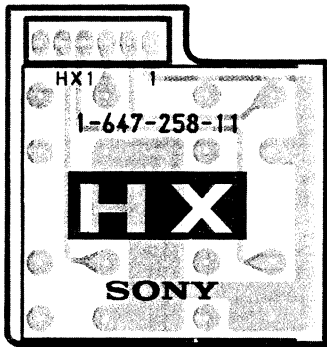
HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), X board (TALLY), Y board (POWER LED)

H

HW board (MANUAL CONTROL)



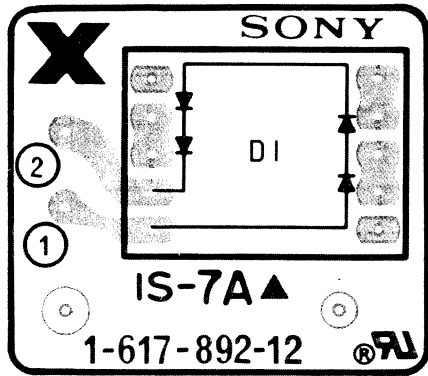
HX board (INPUT SELECT)



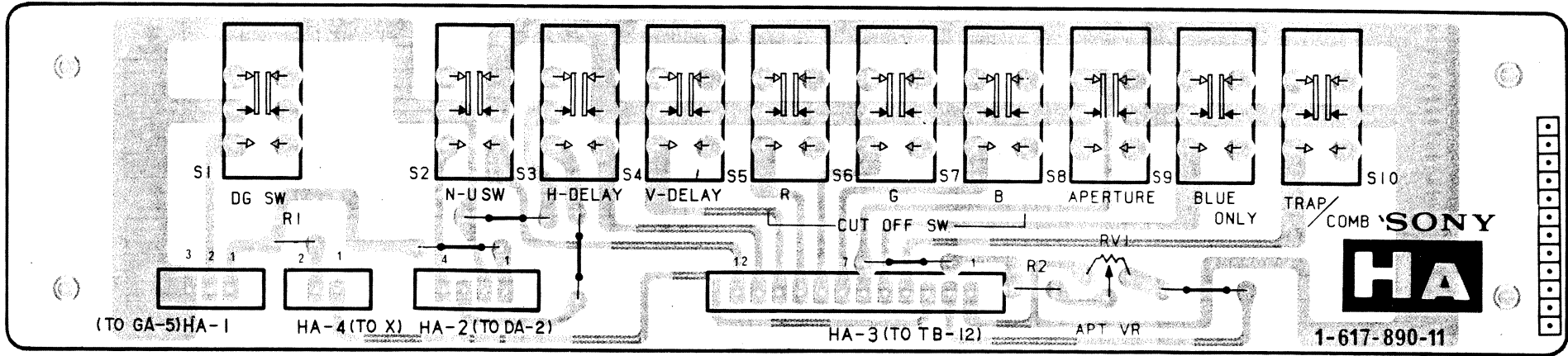
HH board (MANUAL VOLUME)



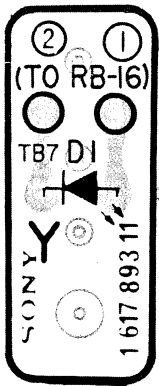
X board (TALLY)



HA board (PANEL CONTROL)



Y board (POWER LED)



HY board (CONTROL FUNCTION SELECT)

HX1

1-647-258-11

HX

SONY

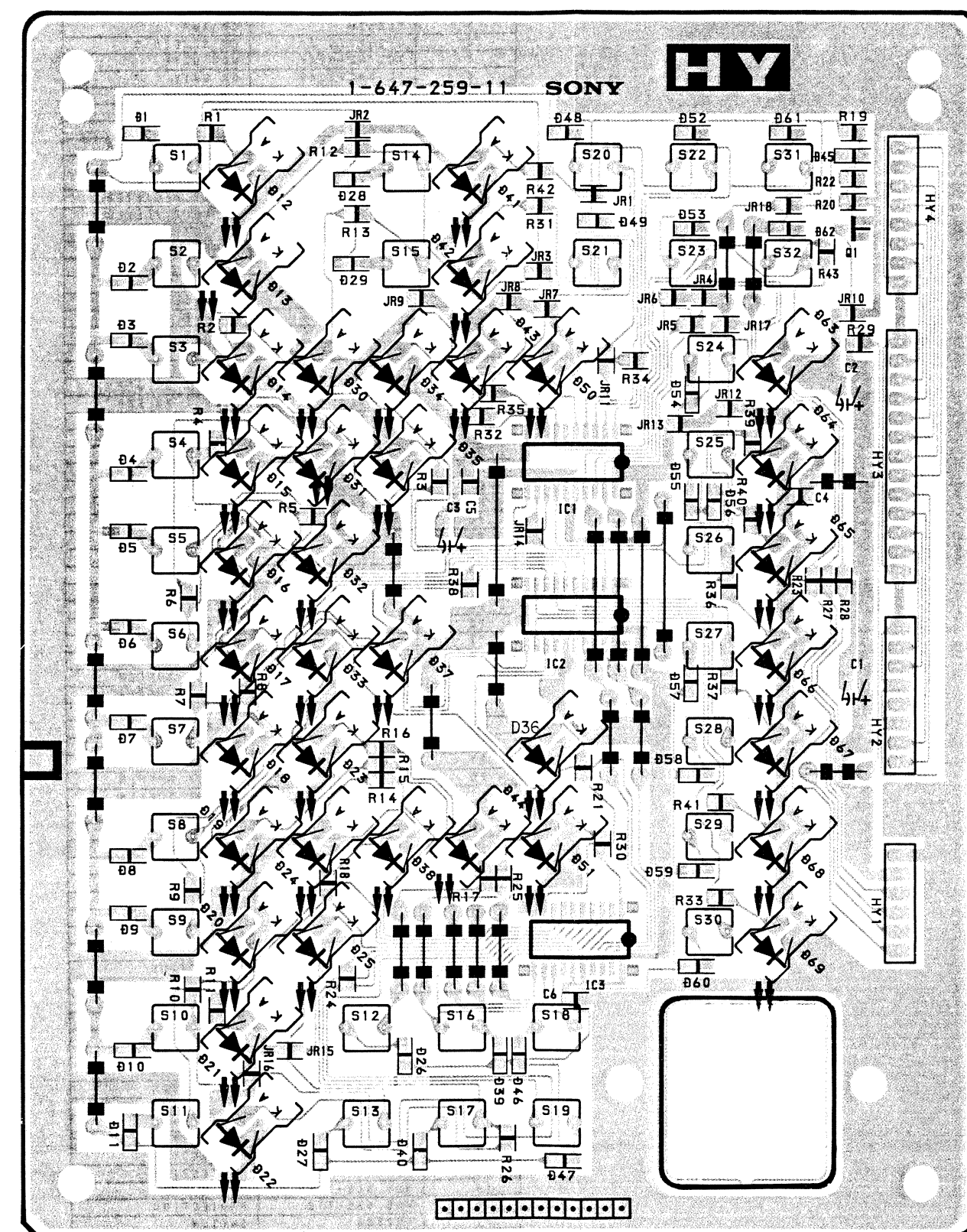
X **SONY**

②

①

IS-7A▲

1-617-892-12 **®** **FM**



5. DIAGRAMS

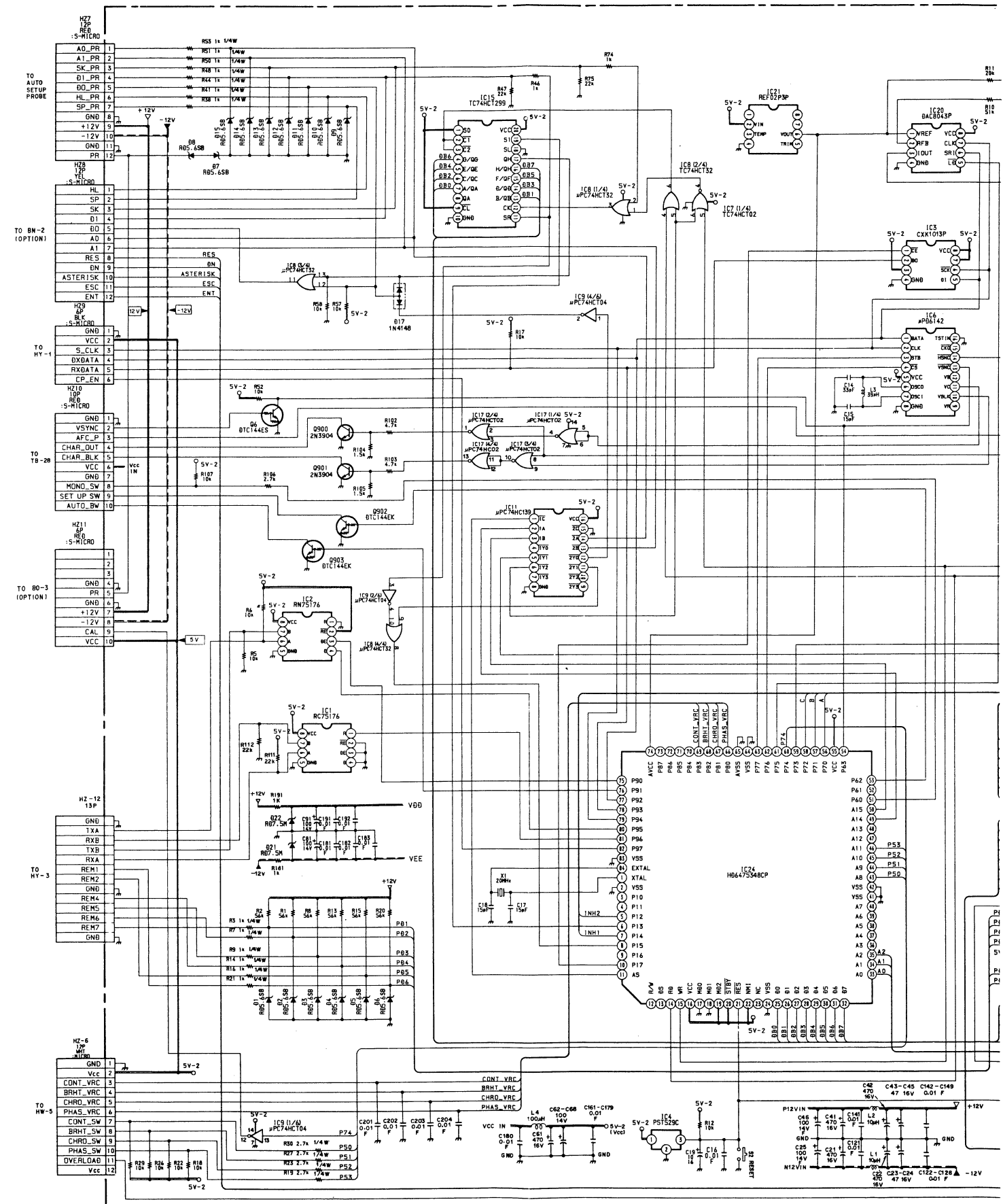
1. **Introduction**
 2. **Background**
 3. **Methodology**
 4. **Results**
 5. **Discussion**
 6. **Conclusion**
 7. **References**
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 9. **Index**
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-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

HZ board (SYSTEM CONTROL)

HZ BOARD

IC 1	SN75176BP	RECEIVER
2	SN75176BP	TRANSMITTER
3	X25040	NV RAM
4	PST529C	RESET
5	TL082M	OP AMP
6	UPD6142G-101	ON SCREEN D
7	TC74HCT02AF	NOR GATE
8	TC74HCT32AF	OR GATE
9	TC74HCT04AF	INVERTOR
10	TL082M	SAMPLE HOLD
11	TC74HCT139AF	DECODER
12	MC14051BF	DE-MULTIPLEXER
13	CX010950	I/O EXPANDER
14	TL082M	SAMPLE HOLD
15	TC74HC299AF	SHIFT REGISTER
16	MC14051BF	DE-MULTIPLEXER
17	TC74HCT02AF	NOR GATE
18	TL082M	SAMPLE HOLD
19	TL082M	SAMPLE HOLD
20	DAC8043GP	D/A CONNECTOR
21	REF02EZ	REF. VOLTAGE
22	TL082M	SAMPLE HOLD
23	TL082M	SAMPLE HOLD
24	HD6475368CP-BVM	CPU
Q 2	DTC144EK	OUTPUT BUFFER
3	DTC144EK	OUTPUT BUFFER
4	DTC144EK	OUTPUT BUFFER
5	DTC144EK	OUTPUT BUFFER
6	DTC144EK	OUTPUT BUFFER
7	DTC144EK	OUTPUT BUFFER
8	DTC144EK	OUTPUT BUFFER
9	DTC144EK	OUTPUT BUFFER
10	DTC144EK	OUTPUT BUFFER
11	DTC144EK	OUTPUT BUFFER
12	DTC144EK	OUTPUT BUFFER
13	DTC144EK	OUTPUT BUFFER
14	DTC144EK	OUTPUT BUFFER
15	DTC144EK	OUTPUT BUFFER
16	DTC144EK	OUTPUT BUFFER
17	DTC144EK	OUTPUT BUFFER
18	DTC144EK	OUTPUT BUFFER
19	2SA1226	OUTPUT BUFFER
20	DTC144EK	OUTPUT BUFFER
21	DTC144EK	OUTPUT BUFFER
22	DTC144EK	OUTPUT BUFFER
23	DTC144EK	OUTPUT BUFFER
24	DTC144EK	OUTPUT BUFFER
25	DTC144EK	OUTPUT BUFFER
26	DTC144EK	OUTPUT BUFFER
27	DTC144EK	OUTPUT BUFFER
28	DTC144EK	OUTPUT BUFFER
29	DTC144EK	OUTPUT BUFFER
30	2SA1226	OUTPUT BUFFER
900	2SC1623	OUTPUT BUFFER
901	2SC1623	OUTPUT BUFFER
902	DTC144EK	OUTPUT BUFFER
903	DTC144EK	OUTPUT BUFFER
D 1	RD5.6ES-T1B	PROTECTION
2	RD5.6ES-T1B	PROTECTION
3	RD5.6ES-T1B	PROTECTION
4	RD5.6ES-T1B	PROTECTION
5	RD5.6ES-T1B	PROTECTION
6	RD5.6ES-T1B	PROTECTION
7	RD5.6ES-T1B	PROTECTION
8	RD5.6ES-T1B	PROTECTION
9	RD5.6ES-T1B	PROTECTION
10	RD5.6ES-T1B	PROTECTION
11	RD5.6ES-T1B	PROTECTION
12	RD5.6ES-T1B	PROTECTION
13	RD5.6ES-T1B	PROTECTION
14	RD5.6ES-T1B	PROTECTION
15	RD5.6ES-T1B	PROTECTION
17	1S2835	SWITCH
18	1S2837	SWITCH
19	1S2837	SWITCH
21	RD7.5M-T1B2	-7.5V REG
22	RD7.5M-T1B2	+7.5V REG

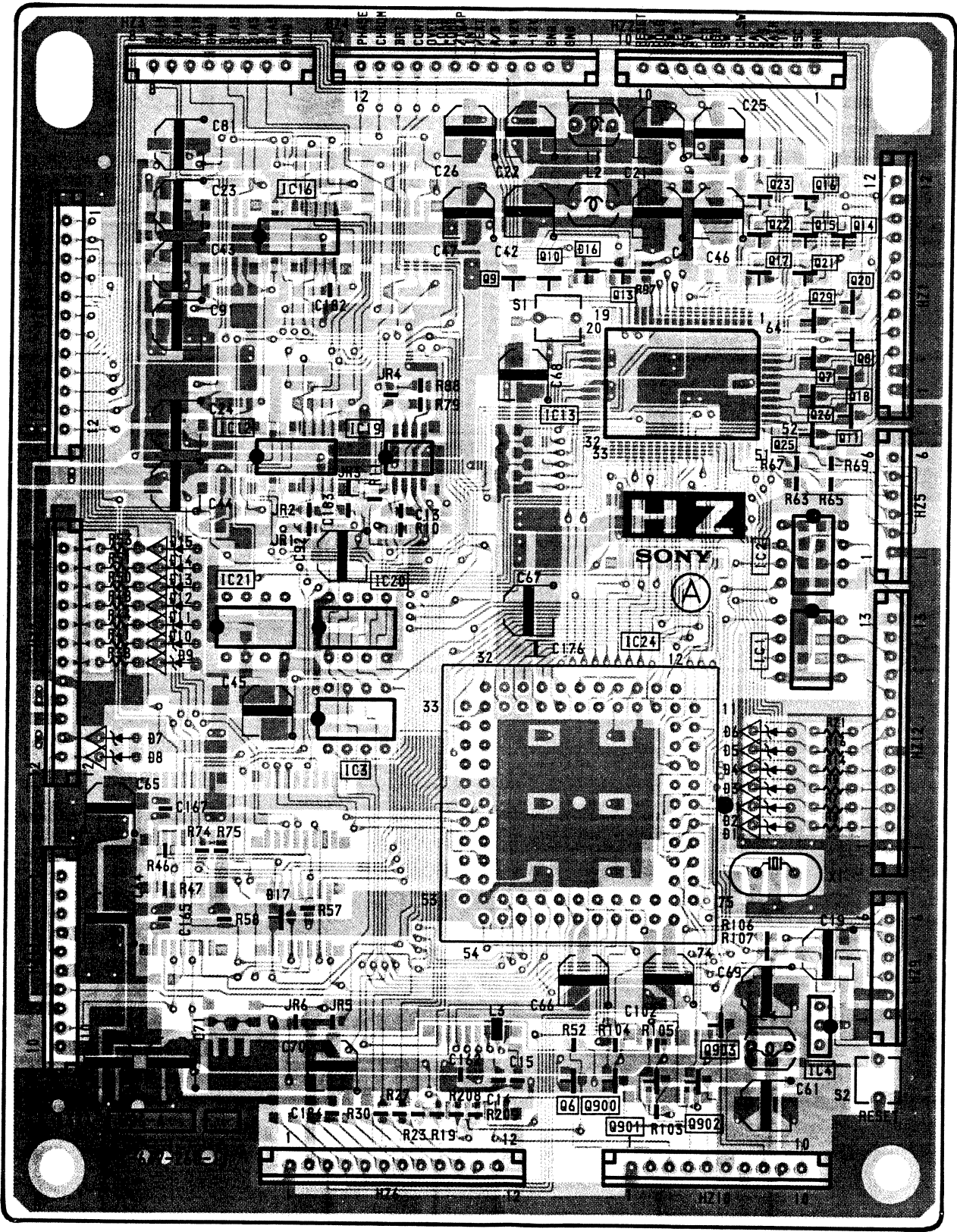




HZ board (SYSTEM CONTROL)

— CONDUCTOR SIDE —

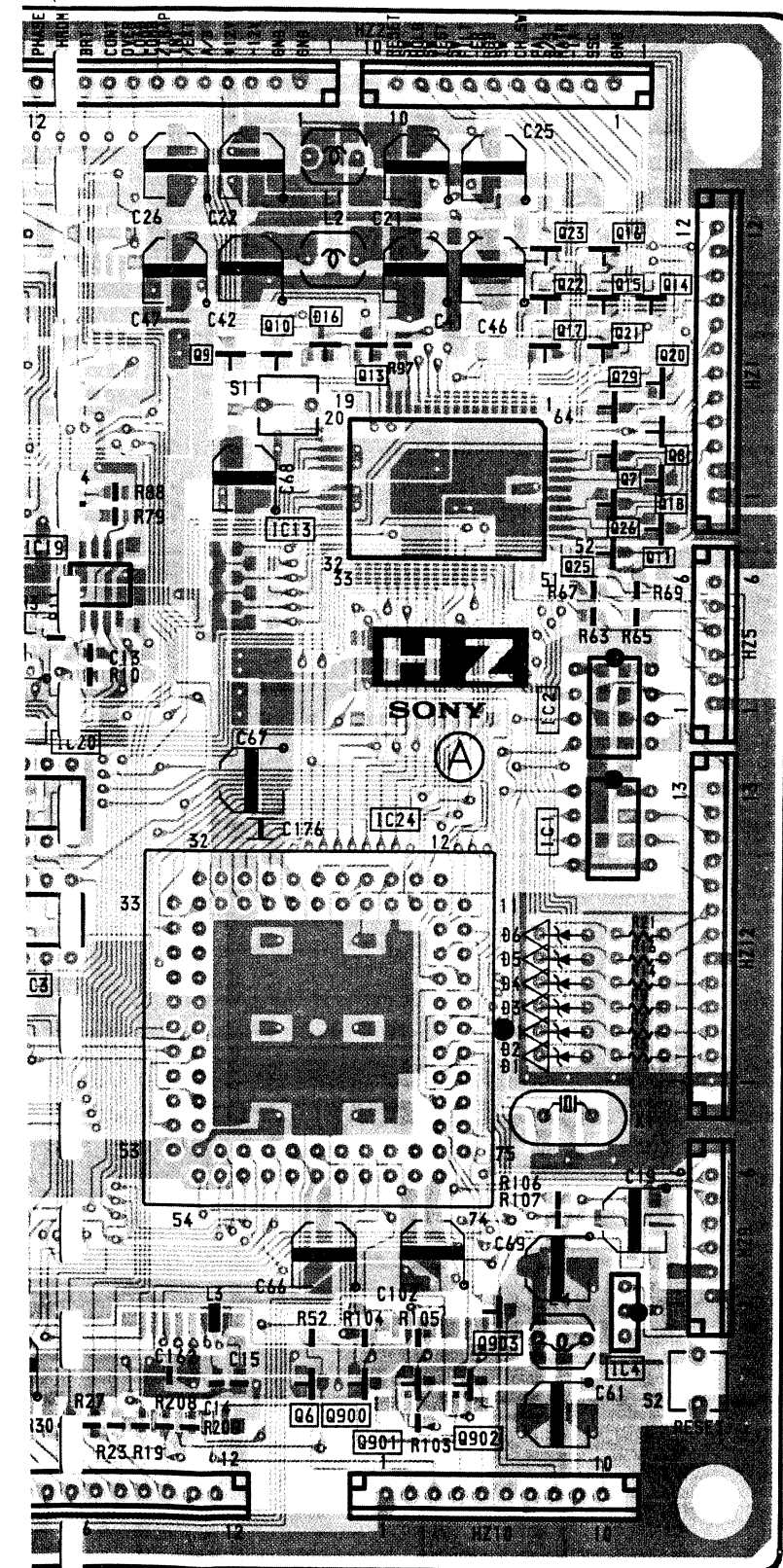
IC	Q	D
16	23 16 22 15 14 9 10 13 17 21 20 29 8 7 18 26 11 25	16
13		
12 19		
2		15 14 13 12 11 10 9
21 20 1		7 8
3		6 5 4 3 2 1
24		17
4	903 6 900 901 902	



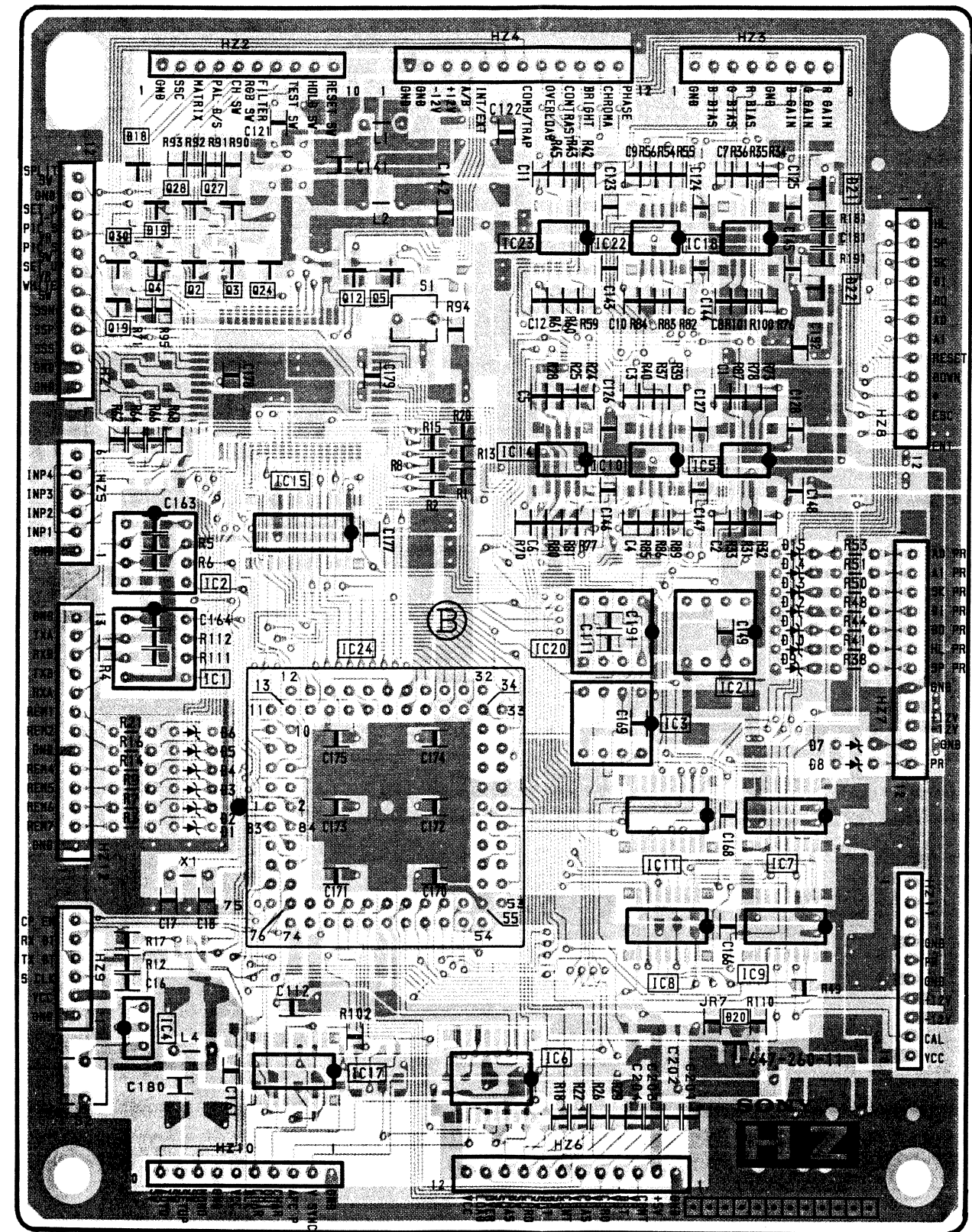
— COMPONENT SIDE —

IC	Q	D
23 22 18	28,27 30 4 2 3 24 19 12 5	18 19 21 22
14 10 5		
2 15		15 14 13 12 11 10 9
1 20 21		6 5 4 3 2 1
3		7 8
24 11 7		
8 9		20
4 17 6		

— COMPONENT SIDE —

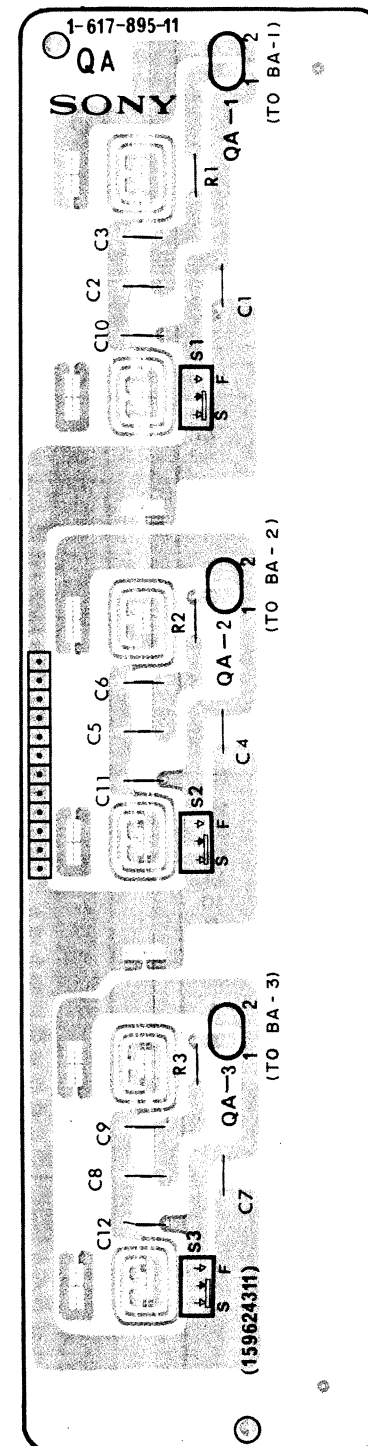


IC	Q	D
23 22 18	28, 27 30 4 2 3 24 19 12 5	18 19 21 22
14 10 5		
2 15		15 14 13 12 11 10 9
1 20 21		7 8
3		
24 11 7		
8 9		
4		20
17 6		

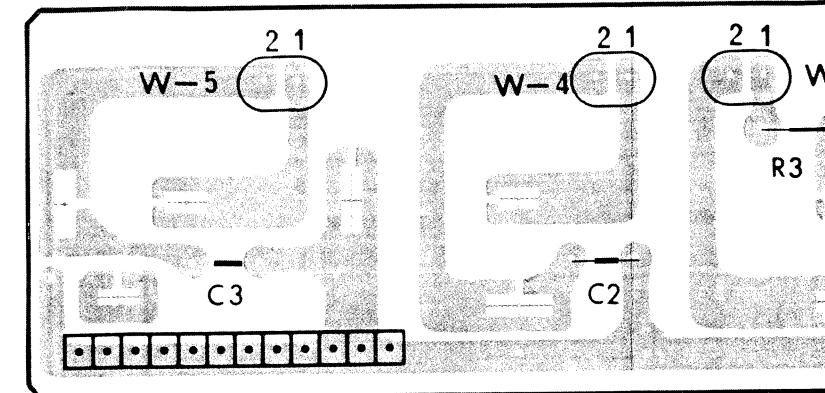


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

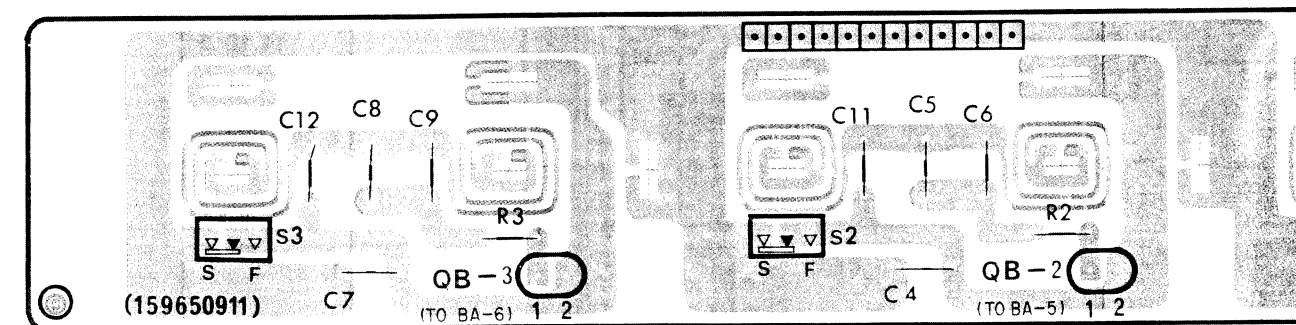
QA board (COMPOSITE VIDEO INPUT)



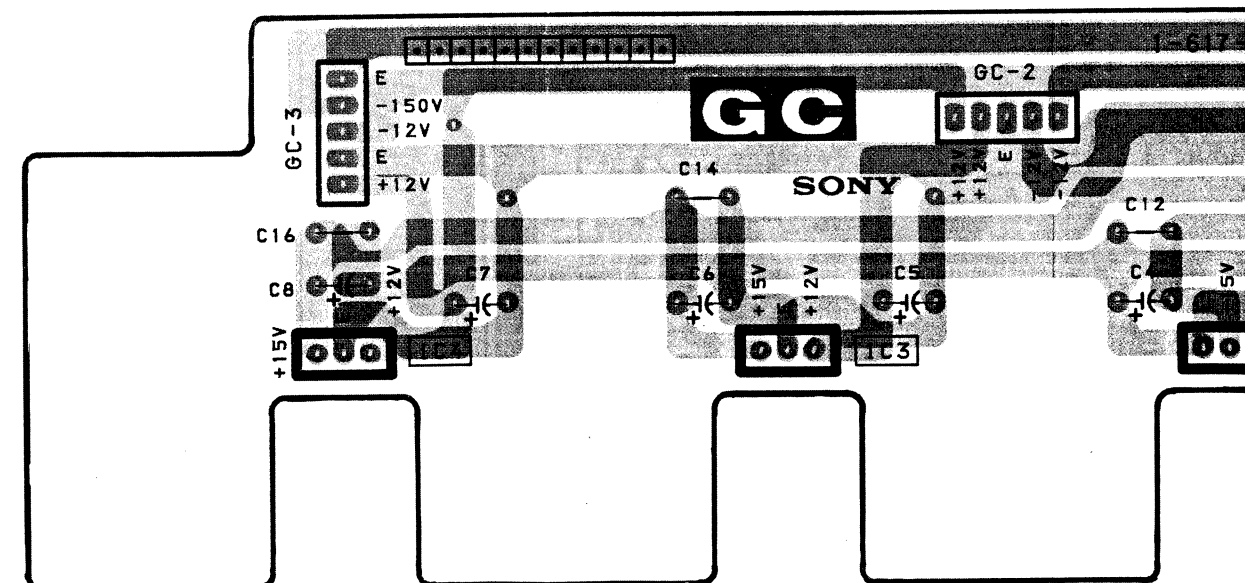
W board (RGB/COMPONENT)



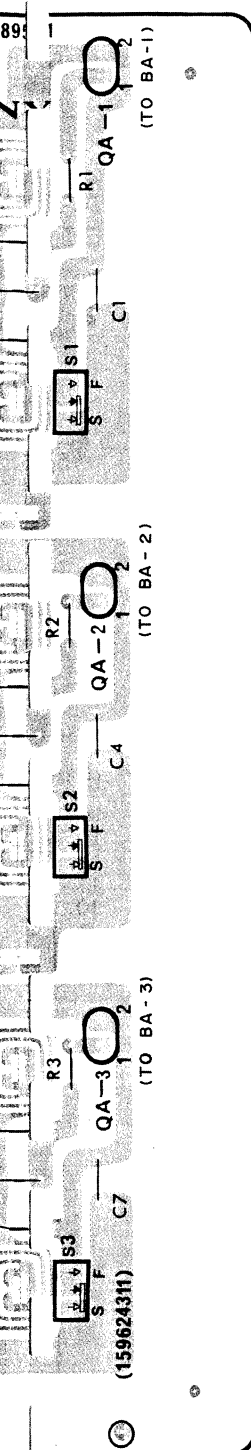
QB board (RGB/COMPONENT INPUT)



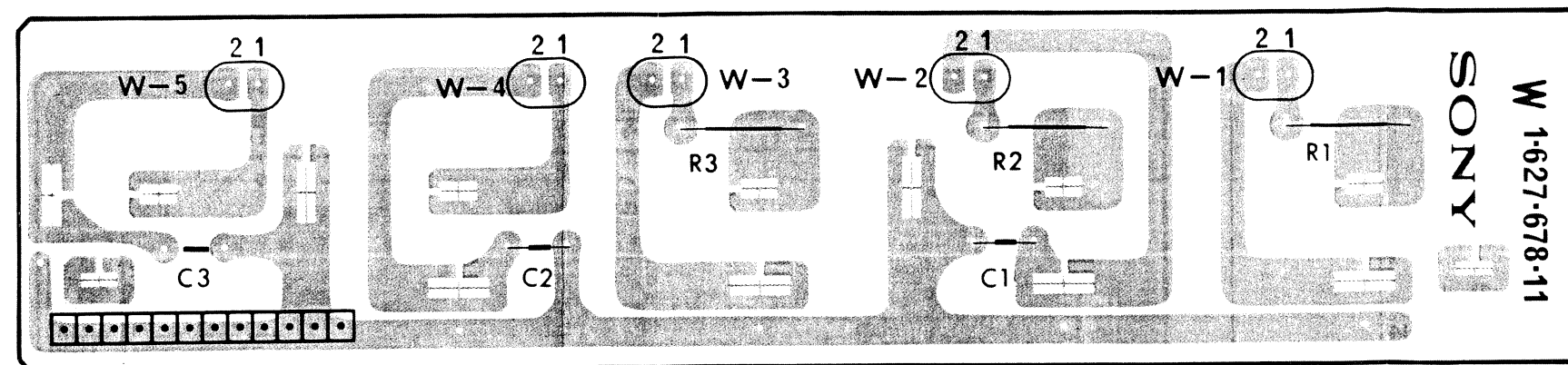
GC board (REG)



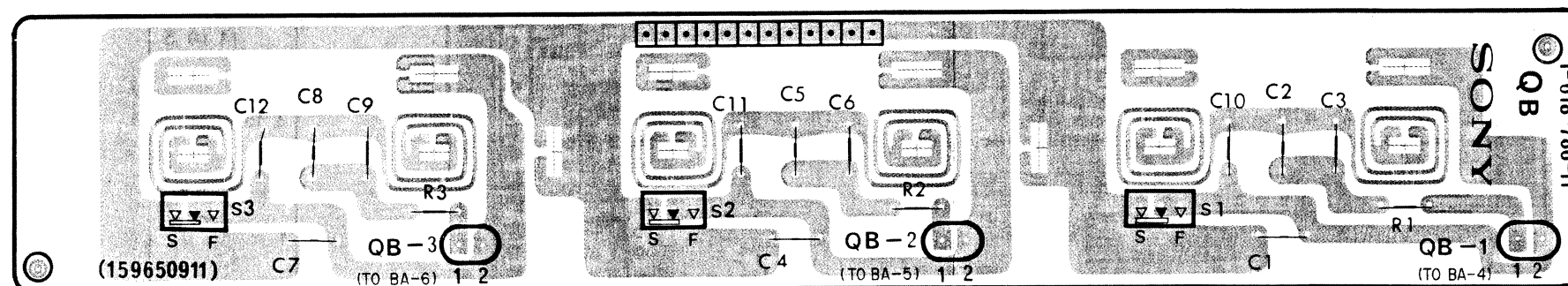
board (COMPOSITE VIDEO INPUT)



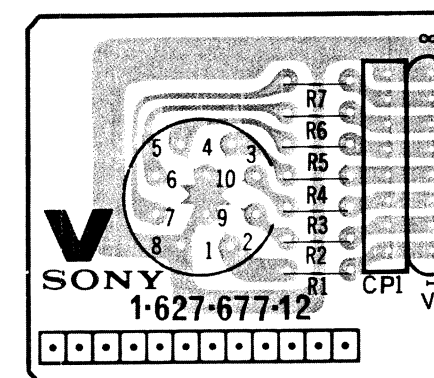
W board (RGB/COMPONENT)



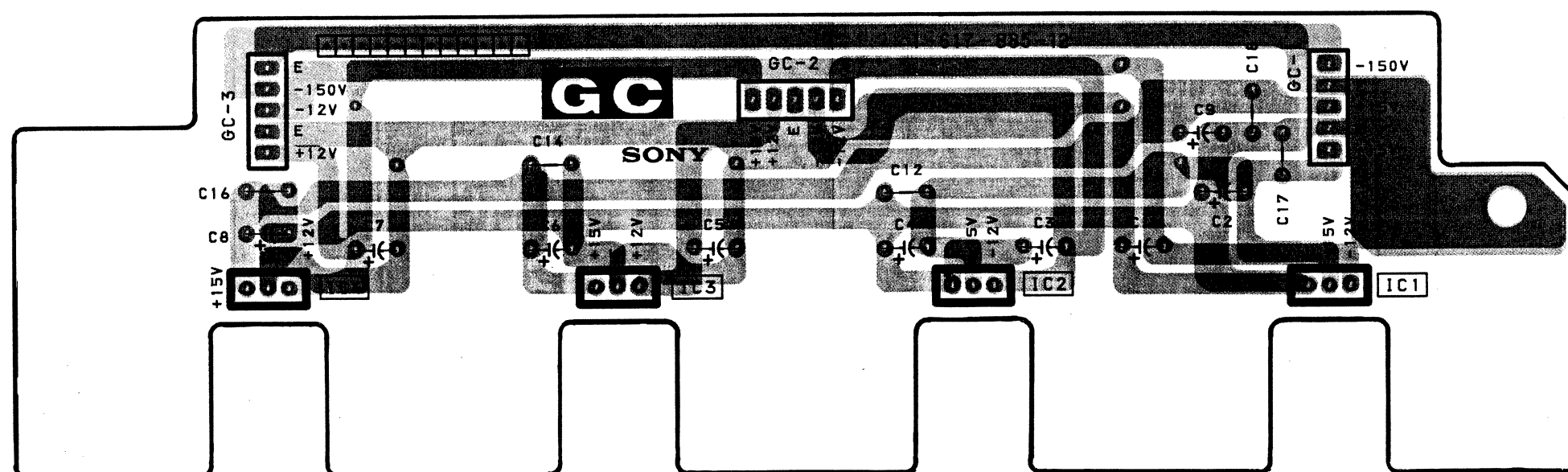
QB board (RGB/COMPONENT INPUT)



V board (REMOTE)



GC board (REG)



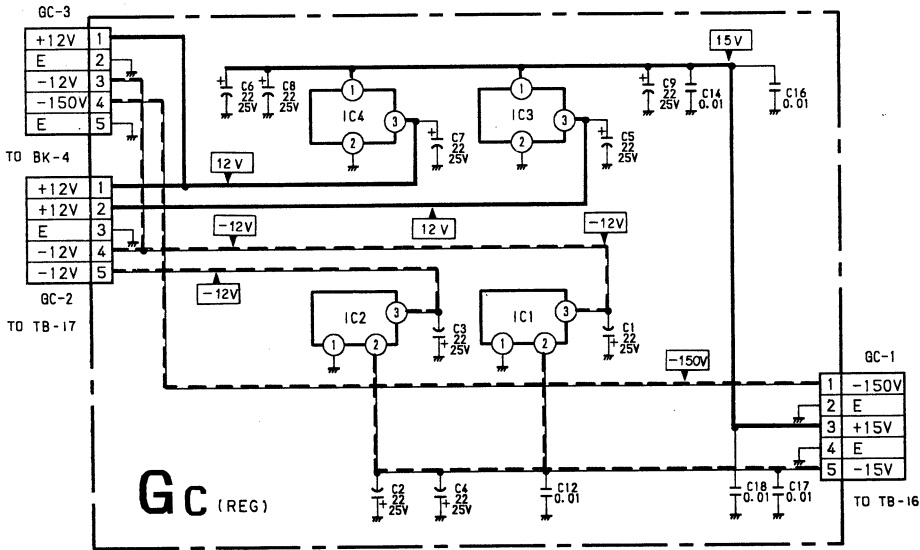
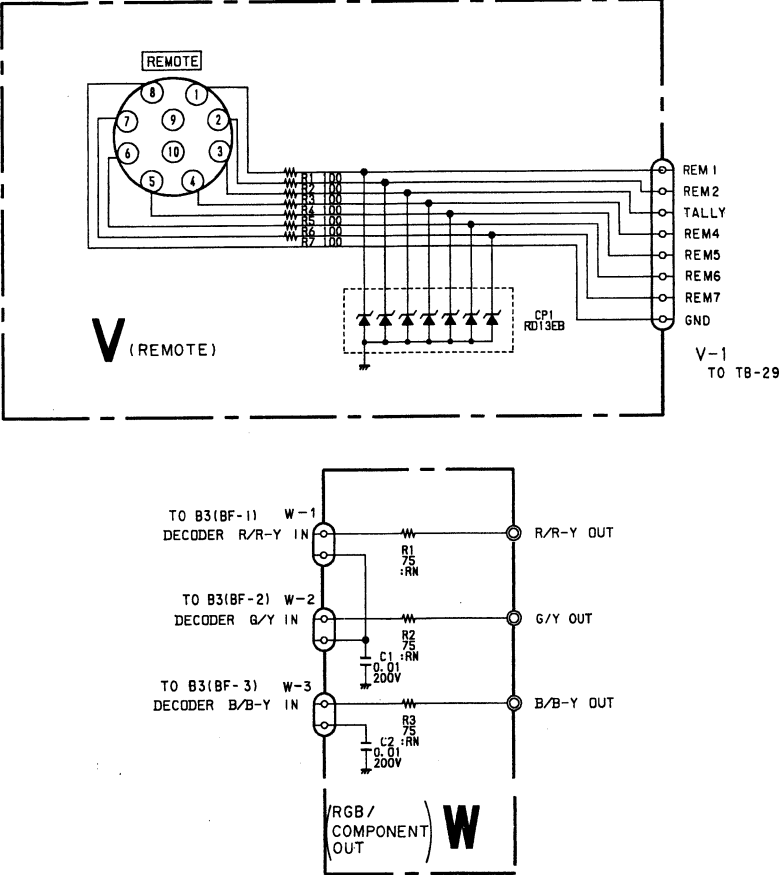
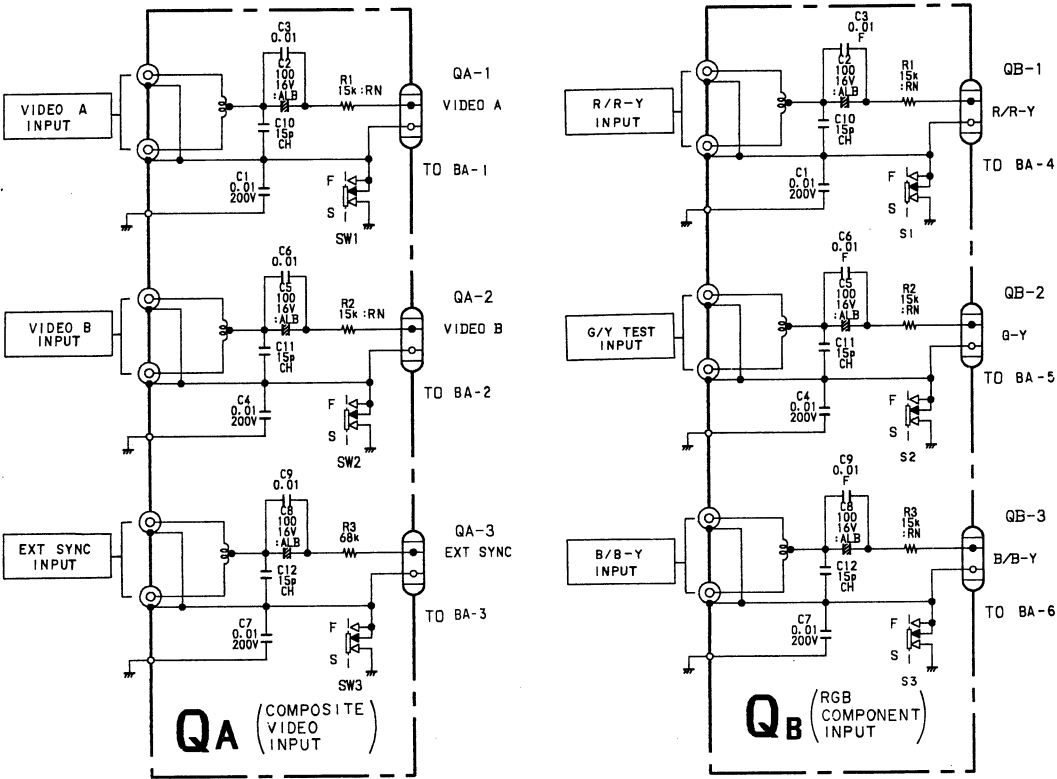
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

GC, QA, QB, V, W

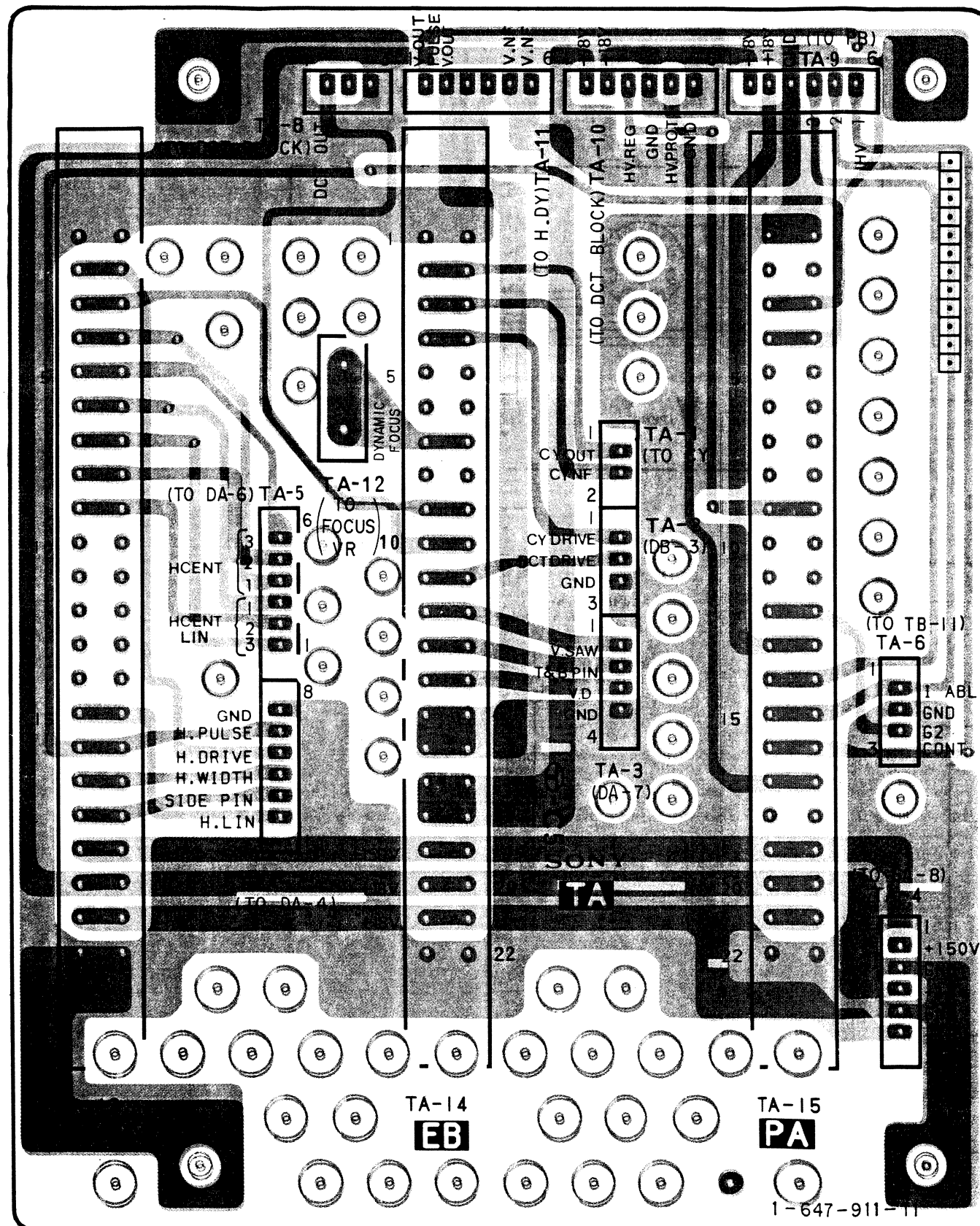
GC, QA, QB, V, W

GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)
V board (REMOTE) W board (RGB/COMPONENT)

GC BOARD		
IC1	uPD7912H	-12V REG
2	uPD7912H	-12V REG
3	uPD7812H	+12V REG
4	uPD7812H	+12V REG

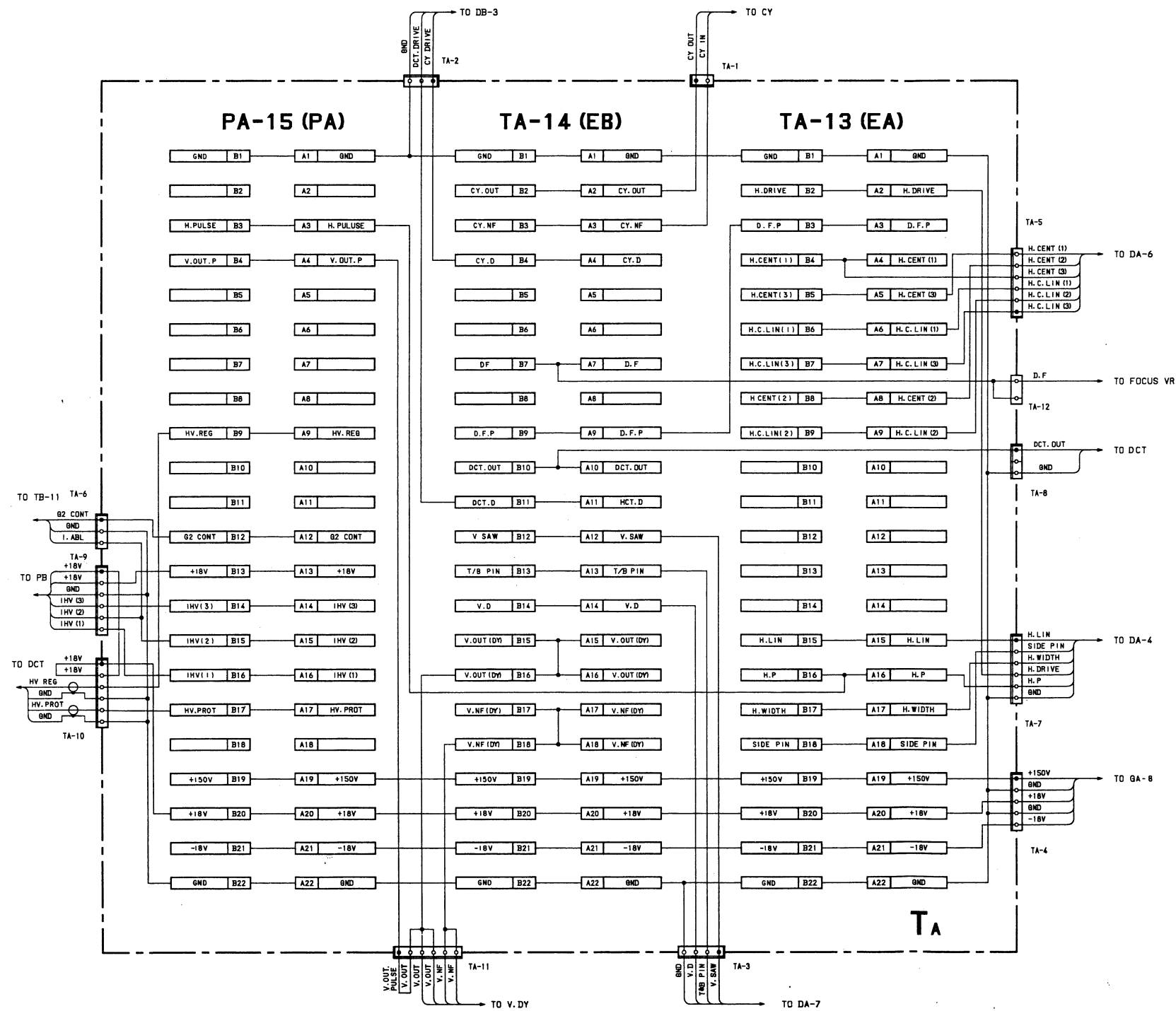


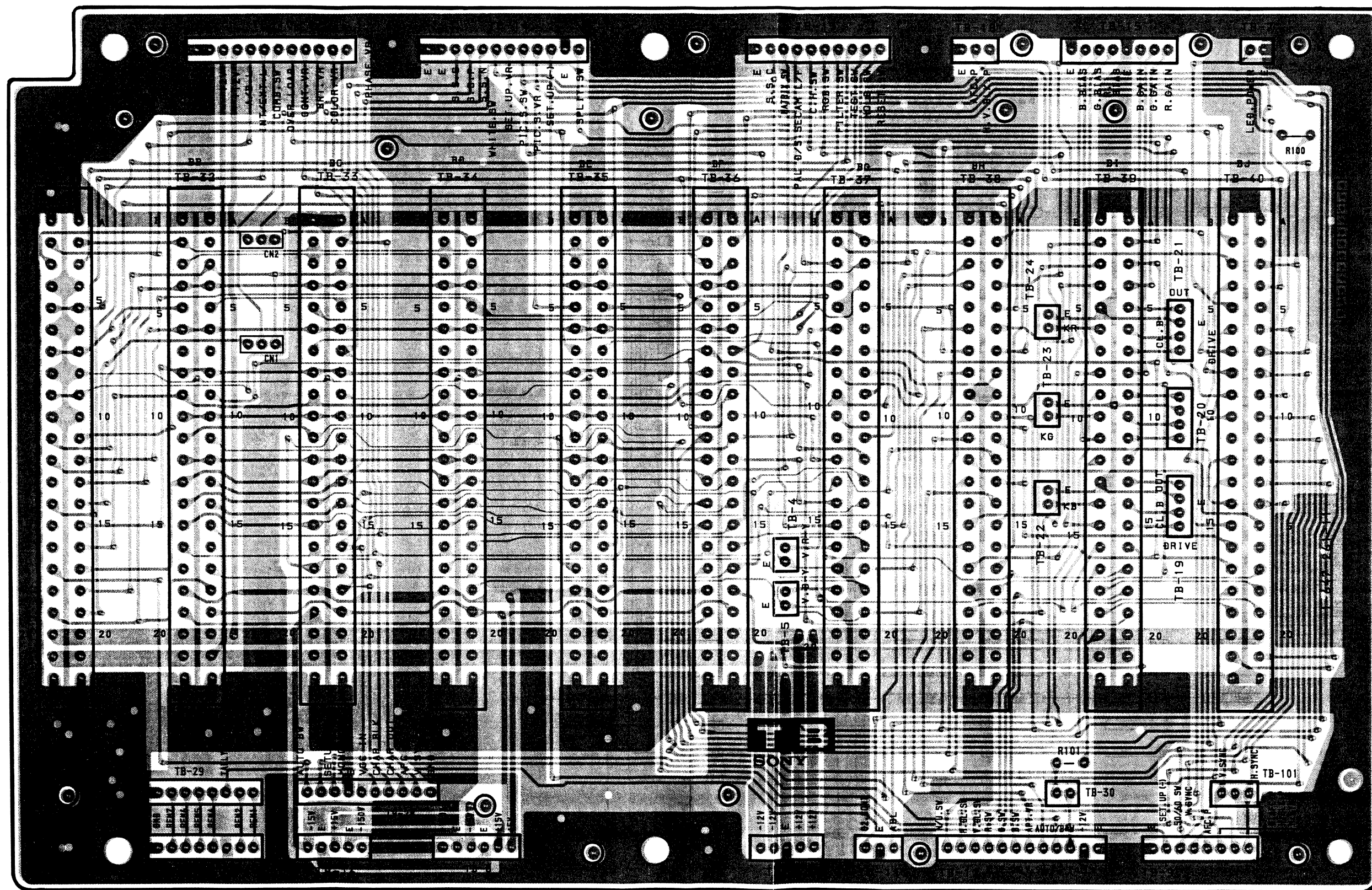
TA board (MOTHER BOARD)



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

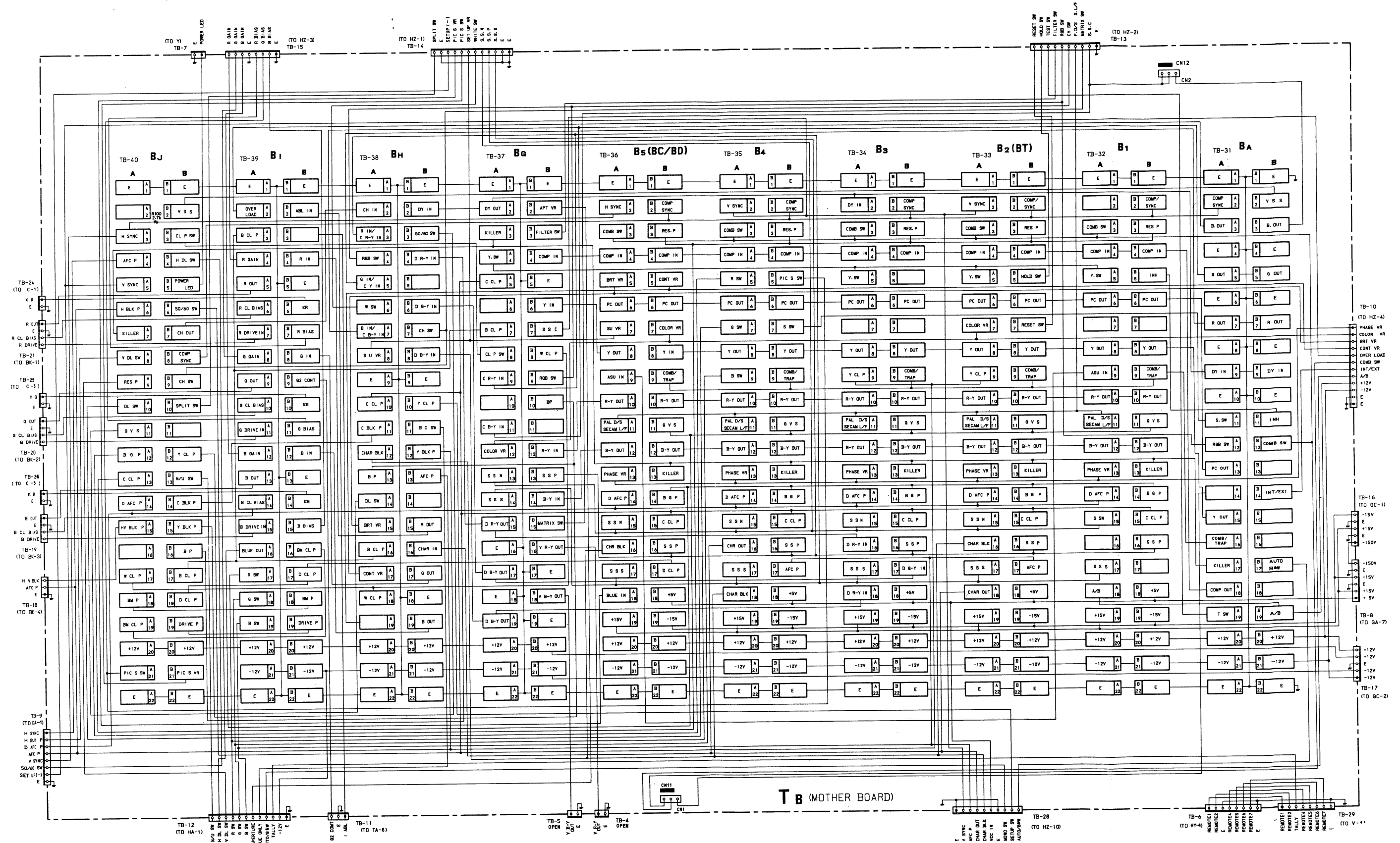
TA board (MOTHER BOARD)





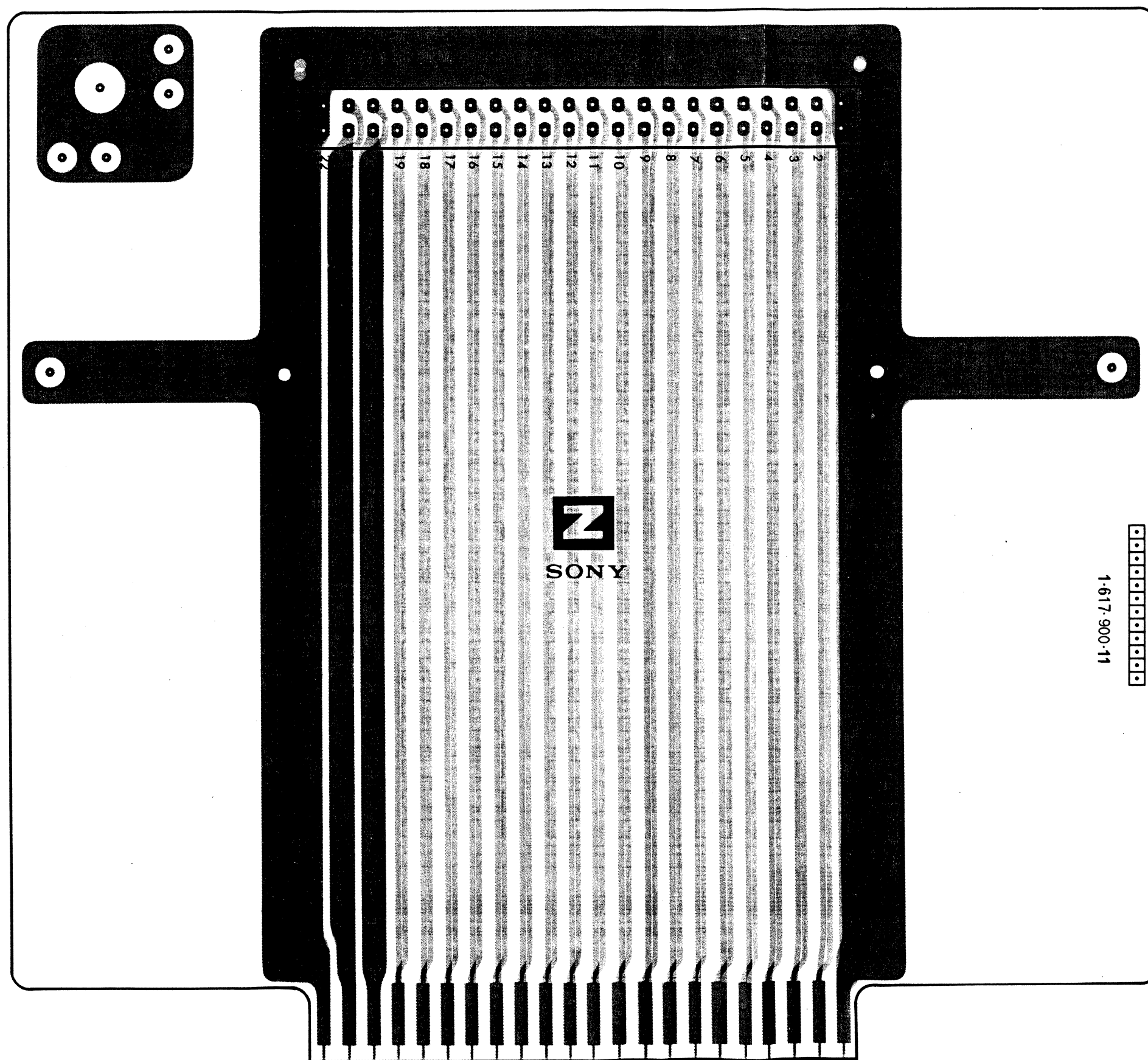
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

TB board (MOTHER BOARD)



Z Z

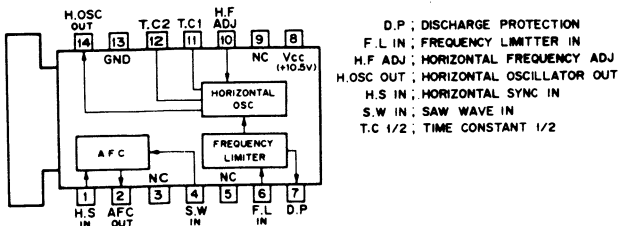
Z board (EXTENSION BOARD)



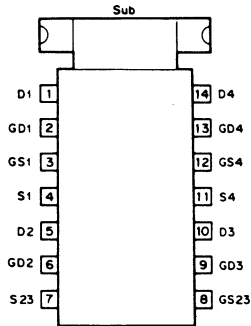
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

5-4. SEMICONDUCTORS

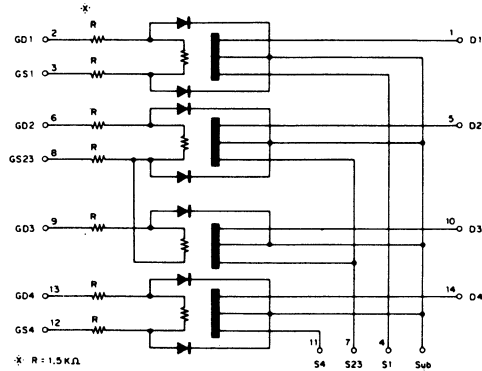
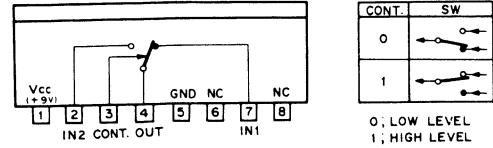
CX-158 (SONY)
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER
— TOP VIEW —



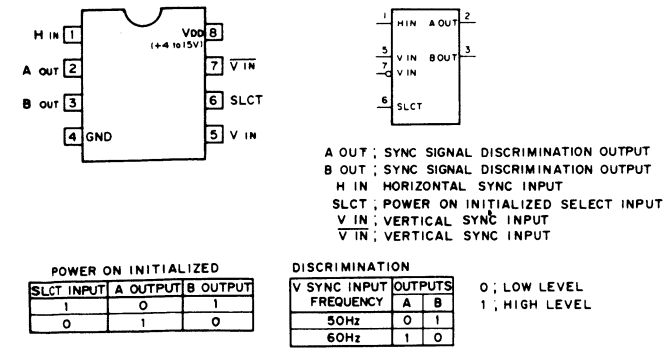
CX-718D (SONY)
SRG FET IC
— TOP VIEW —



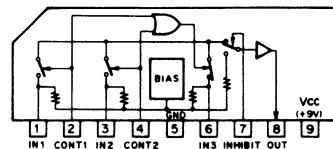
CX20061 (SONY)
ANALOG SWITCH
— SIDE VIEW —



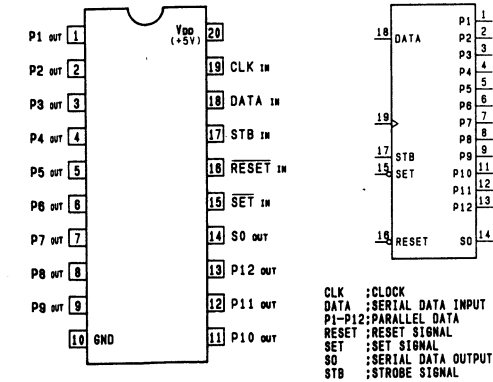
CX23025 (SONY)
C-MOS TV-VTR SYNC SIGNAL DISCRIMINATOR
— TOP VIEW —



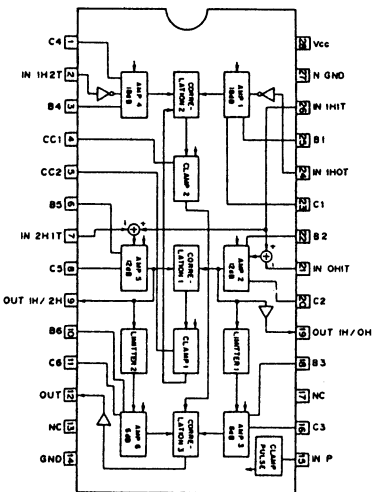
CX894 (SONY)
3 INPUT SWITCH
— SIDE VIEW —



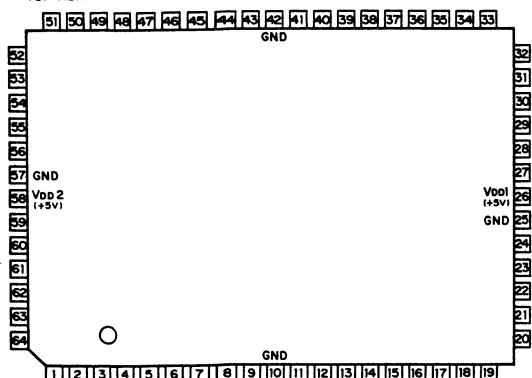
CX7991 (SONY)
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER
— TOP VIEW —



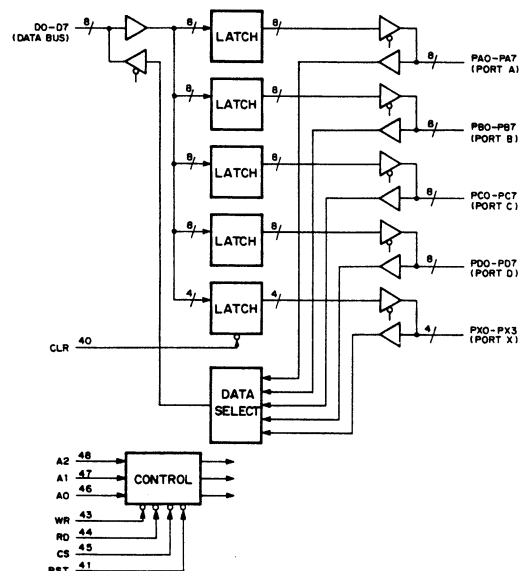
CXA1539P



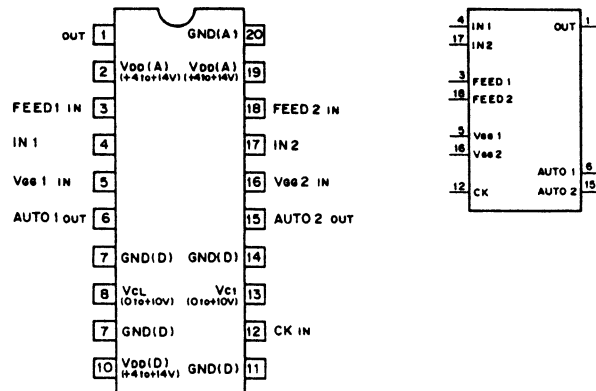
CXD1095Q (SONY) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —



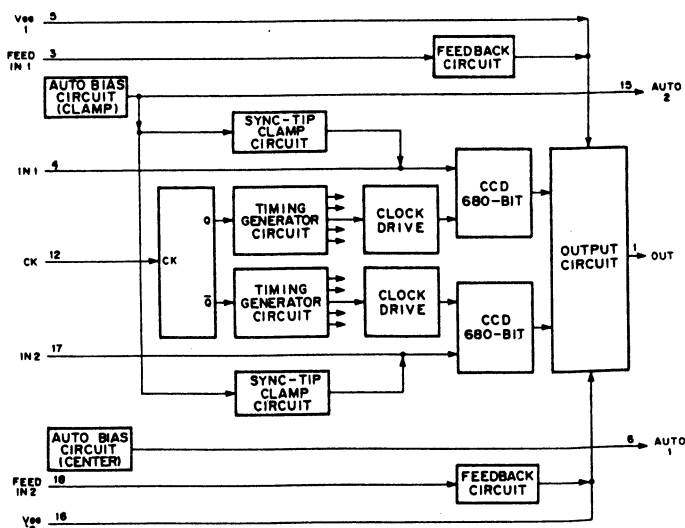
PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	O	O	PC6	33			NC	49	O	O	PX0
2			NC	18	O	O	PC7	34			NC	50	O	O	PX1
3	O	O	PB1	19			NC	35	O	O	D3	51			NC
4	O	O	PB2	20	O	O	PD0	36	O	O	D4	52	O	O	PX2
5	O	O	PB3	21	O	O	PD1	37	O	O	D5	53	O	O	PX3
6	O	O	PB4	22	O	O	PD2	38	O	O	D6	54	O	O	PA0
7	O	O	PB5	23	O	O	PD3	39	O	O	D7	55	O	O	PA1
8	O	O	PB6	24	O	O	PD4	40	O	O	CLR	56	O	O	PA2
9	O	O	PB7	25			GND	41	O	O	RST	57			GND
10			GND	26	O	O	Vdd(+5V)	42			GND	58	O	O	Vdd(+5V)
11	O	O	PC0	27	O	O	PD5	43	O	O	WR	59	O	O	PA3
12	O	O	PC1	28	O	O	PD6	44	O	O	RD	60	O	O	PA4
13	O	O	PC2	29	O	O	PD7	45	O	O	CS	61	O	O	PA5
14	O	O	PC3	30	O	O	D0	46	O	O	A0	62	O	O	PA6
15	O	O	PC4	31	O	O	D1	47	O	O	A1	63	O	O	PA7
16	O	O	PC5	32	O	O	D2	48	O	O	A2	64	O	O	PB0



CXL1009P (SONY)
C-MOS CCD SIGNAL PROCESSOR FOR TBC
— TOP VIEW —



OUT ; OUT PUT
FEED 1/2 IN ; FEEDBACK INPUT 1/2
IN 1/2 ; INPUT 1/2
Vee 1/2 IN ; GATE INPUT 1/2
AUTO 1/2 OUT ; AUTO BIAS OUTPUT 1/2
CK IN ; CLOCK INPUT
VCL ; POWER SUPPLY 2 (DIGITAL)
Vdd(A)/(D) ; POWER SUPPLY 1 (ANALOG)/(DIGITAL)
GND(A)/(D) ; GROUND (ANALOG)/(DIGITAL)



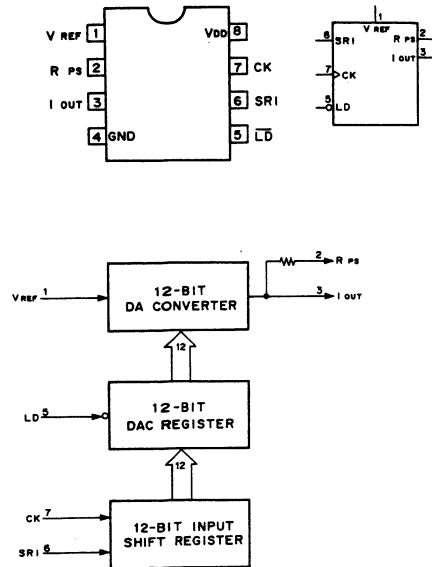
CS	RD	WR	A2	A1	A0	MODE
0	0	1	0	0	0	PORT A → DATA BUS
0	0	1	0	0	1	PORT B → DATA BUS
0	0	1	0	1	0	PORT C → DATA BUS
0	0	1	0	1	1	PORT D → DATA BUS
0	0	1	1	0	0	PORT X → DATA BUS
0	0	1	1	0	1	—
0	0	1	1	1	0	—
0	0	1	1	1	1	—
0	1	0	0	0	0	DATA BUS → PORT A
0	1	0	0	0	1	DATA BUS → PORT B
0	1	0	0	1	0	DATA BUS → PORT C
0	1	0	0	1	1	DATA BUS → PORT D
0	1	0	1	0	0	DATA BUS → PORT X
0	1	0	1	0	1	—
0	1	0	1	1	0	DATA BUS → CTL REG.1
0	1	0	1	1	1	DATA BUS → CTL REG.2
1	X	X	X	X	X	DATA BUS ; HI-Z

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

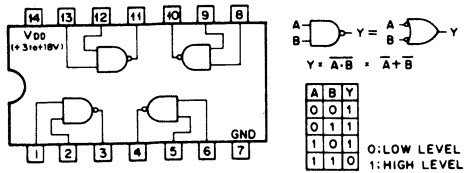
DO-D7; DATA BUS INPUTS/OUTPUTS
CS; CHIP SELECT INPUT
RD; READ STROBE INPUT
WR; WRITE STROBE INPUT
AO-A2; ADDRESS INPUT
RST; RESET INPUT
CLR; CLEAR INPUT

PA0-PA7; PORT A INPUTS/OUTPUTS
PB0-PB7; PORT B INPUTS/OUTPUTS
PC0-PC7; PORT C INPUTS/OUTPUTS
PD0-PD7; PORT D INPUTS/OUTPUTS
PX0-PX3; PORT X INPUTS/OUTPUTS

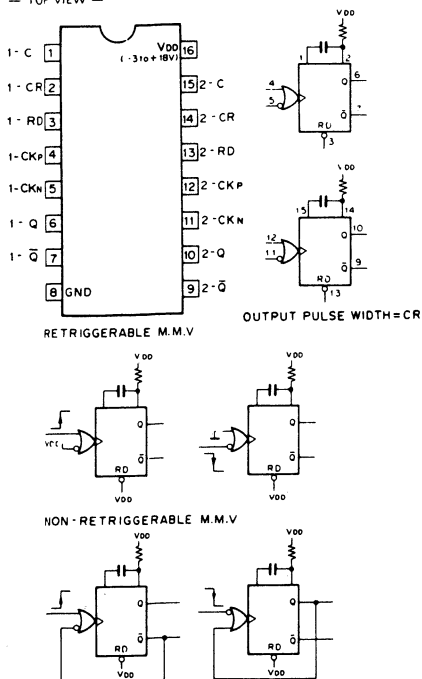
DAC-8043GP (PMI)
C-MOS 12-BIT SERIAL INPUT D/A CONVERTER
- TOP VIEW -



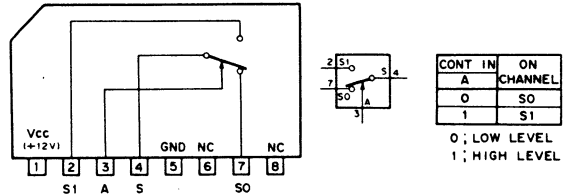
HD14011BP (HITACHI)
MC14011BCP (MOTOROLA)
TC4011BP (TOSHIBA)
uPD4011BC (NEC)
C-MOS 2-INPUT NAND GATE
- TOP VIEW -



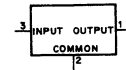
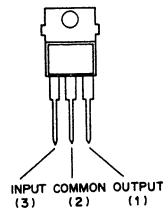
HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
- TOP VIEW -



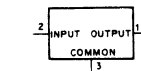
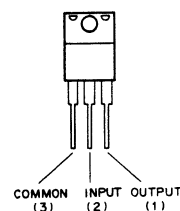
LA7016 (SANYO)
ELECTRONIC SWITCH
- SIDE VIEW -



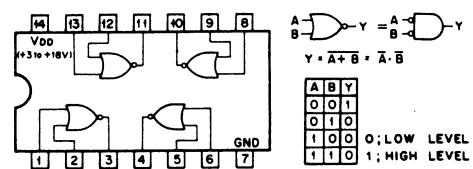
LM7812CT
XRA17809T
POSITIVE VOLTAGE REGULATOR (500mA)
- FRONT VIEW -



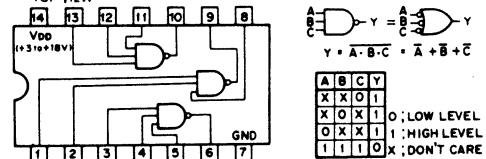
LM7912CT (NS) -12V
NEGATIVE VOLTAGE REGULATOR
- FRONT VIEW -



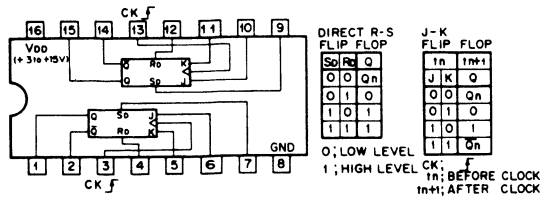
MC14001BCP (MOTOROLA)
uPD4001BC (NEC)
C-MOS 2-INPUT NOR GATE
- TOP VIEW -



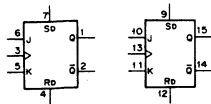
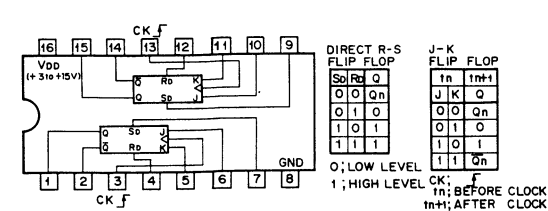
MC14023BCP (MOTOROLA)
TC4023BP (TOSHIBA)
C-MOS 3-INPUT NAND GATE
- TOP VIEW -



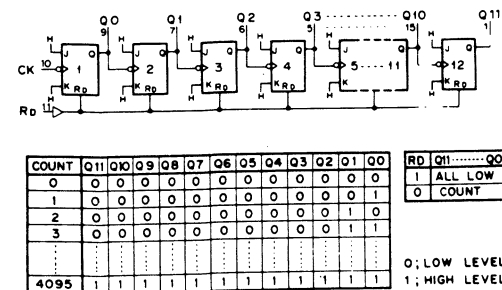
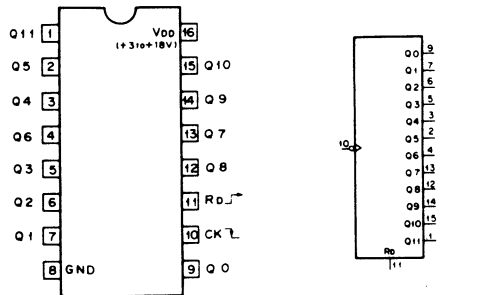
MB84027B (FUJITSU)
TC504027BP (TOSHIBA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



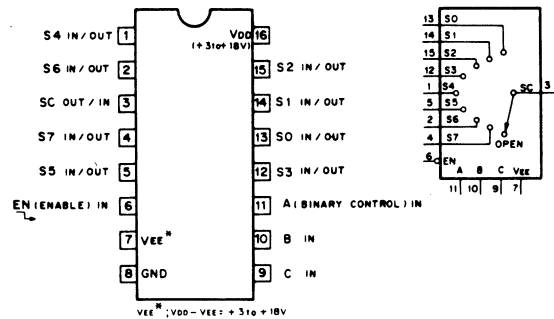
MC14027BCP (MOTOROLA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



MC14040BCP (MOTOROLA)
TC4040BP (TOSHIBA)
C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER
— TOP VIEW —



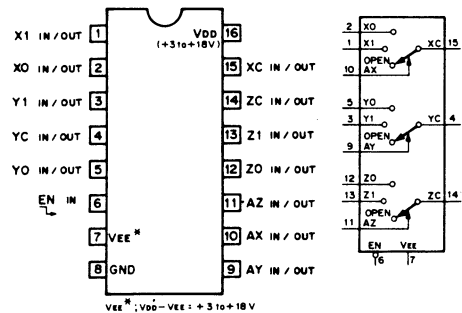
MC14051BF
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0; LOW LEVEL
 1; HIGH LEVEL
 X; DON'T CARE

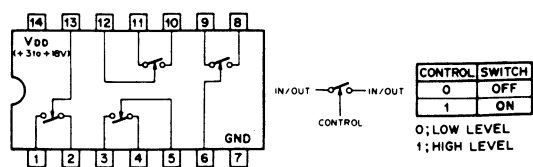
MC14053BCP (MOTOROLA)
TC4053BP
TC4053BPHB (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



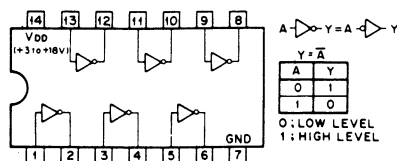
CONT. INPUTS	ON
EN A (X,Y,Z)	CHANNEL
0	0
0	1
1	X

0; LOW LEVEL
 1; HIGH LEVEL
 X; DON'T CARE.

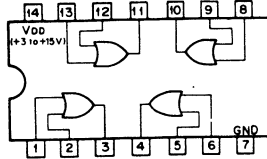
MC14088BCP
uPD4088BC
C-MOS BILATERAL ANALOG SWITCH
— TOP VIEW —



MC14089UBCP
uPD4089UBC (NEC)
C-MOS INVERTER
— TOP VIEW —



MC14071BCP (MOTOROLA)
TC4071BP (TOSHIBA)
uPD4071BC (NEC)
C-MOS 2-INPUT OR GATE
— TOP VIEW —

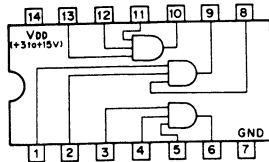


$A \quad B \quad Y$
 $Y = A + B = \overline{A} \cdot \overline{B}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

MC14073BCP (MOTOROLA)
TC4073BP (TOSHIBA)
uPD4073BC (NEC)
C-MOS 3-INPUT POSITIVE AND GATE
— TOP VIEW —

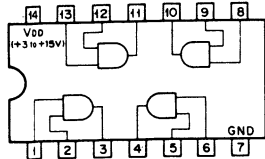


$A \quad B \quad C \quad Y$
 $Y = A \cdot B \cdot C = \overline{A} + \overline{B} + \overline{C}$

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

MC14081BCP (MOTOROLA)
TC4081BP (TOSHIBA)
uPD4081BC (NEC)
C-MOS 2-INPUT AND GATE
— TOP VIEW —

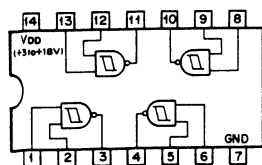


$A \quad B \quad Y$
 $Y = A \cdot B = \overline{A} + \overline{B}$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

MC14093BCP
TC4093BP (TOSHIBA)
C-MOS 2-INPUT NAND SCHMITT TRIGGER
— TOP VIEW —



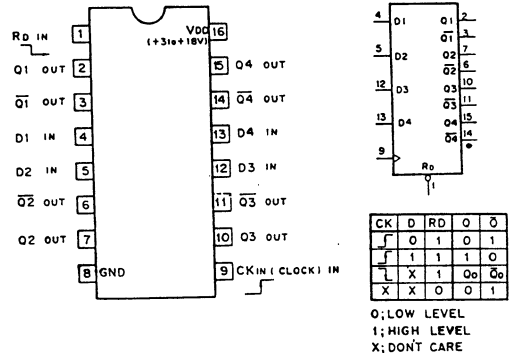
$A \quad B \quad Y$
 $Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

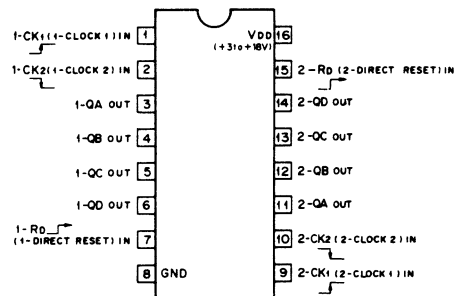
0: LOW LEVEL
1: HIGH LEVEL

V_{out}
 V_{DD}
 V_{in}
 $V_{out} = V_{in}$ (at $V_{DD} = 5V$)
 $2.2 \text{ } 2BV$

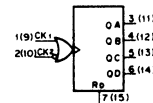
MC14175BCP (MOTOROLA)
TC40175BP (TOSHIBA)
C-MOS DECADE COUNTER/DIVIDER
— TOP VIEW —



MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
— TOP VIEW —

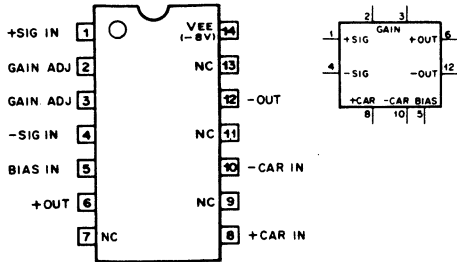


STATE	OUTPUTS
0	0 0 0 0 0
1	0 0 0 0 1
2	0 0 1 0 0
3	0 0 1 0 1
4	0 1 0 0 0
5	0 1 0 0 1
6	0 1 1 0 0
7	0 1 1 0 1
8	1 0 0 0 0
9	1 0 0 0 1
10	1 0 1 0 0
11	1 0 1 0 1
12	1 1 0 0 0
13	1 1 0 0 1
14	1 1 1 0 0
15	1 1 1 0 1

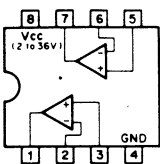


CK1	CK2	R0	ACTION
1	0	0	INCREMENT COUNTER
0	1	0	INCREMENT COUNTER
1	0	1	NO CHANGE
0	1	1	NO CHANGE
1	1	0	NO CHANGE
0	0	1	NO CHANGE
1	1	1	QA THRU QD = 0

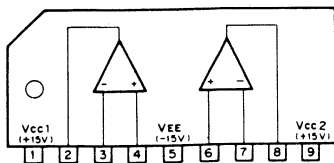
MC1496P (MOTOROLA)
BALANCED MODULATOR/DEMODULATOR
— TOP VIEW —



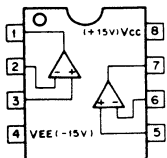
NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —



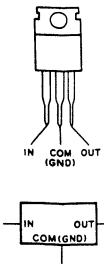
NJM4558
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



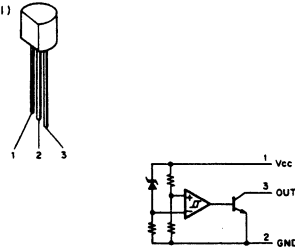
NJM4558D (JRC)
uPC4558C (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —



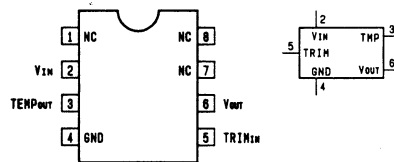
NJM7805FA
NJM7809FA
NJM7812FA
POSITIVE VOLTAGE REGULATOR (1A)
— SIDE VIEW —



PST529C (MITSUMI) $V_s = 4.5V$
VOLTAGE DETECTOR, SYSTEM RESET
(MITSUMI)

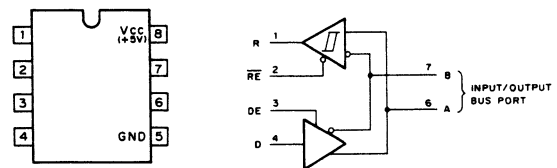


REF-02EZ (PMI)
REFERENCE/TEMPERATURE TRANSDUCER
— TOP VIEW —



VIN : INPUT VOLTAGE (+7V to +40V)
TEMPout : TEMPERATURE TRANSDUCER
VOLTAGE OUTPUT (2.1mV/°C)
TRIMin : OUTPUT SIGNAL TRIMMING
Vout : OUTPUT VOLTAGE (+5V)

SN75176BP (TI)
TTL-DIFFERENTIAL BUS TRANSCEIVER
— TOP VIEW —



FUNCTION TABLE
— DRIVER —

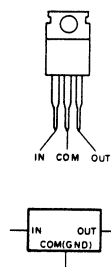
INPUT	ENABLE	OUTPUT
D	DE	A B
1	1	1 0
0	1	0 1
X	0	HI-Z HI-Z

— RECEIVER —

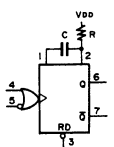
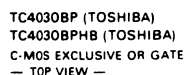
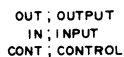
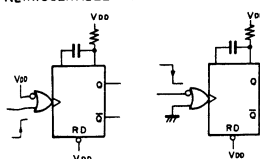
DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	RE	R
$V_{id} > 0.2V$	0	1
$-0.2V < V_{id} < 0.2V$	0	?
$V_{id} < -0.2V$	0	0
X	1	HI-Z

1 : HIGH LEVEL
0 : LOW LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE
? : INDETERMINATE

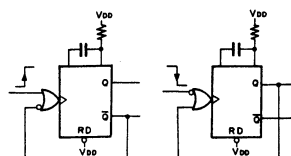
TA7812S
POSITIVE VOLTAGE REGULATOR (0.5A)
— SIDE VIEW —



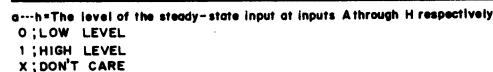
TA7193P (TOSHIBA)
TV CHROMA PROCESS (PAL)
— TOP VIEW —

**RETRIGGERABLE M.M.V.**

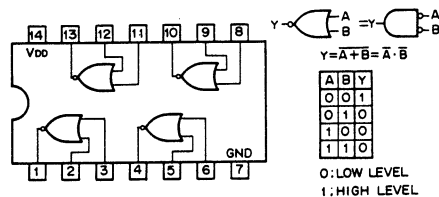
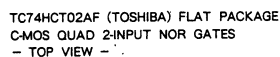
NON - RETRIGGERABLE M.M.V.



TC74HC299FA
TTL 8-BIT UNIVERSAL SHIFT/STORAGE REGISTER
— TOP VIEW —



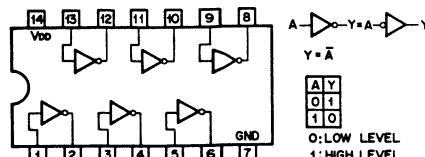
TC74HCT139AF
TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —



NOTE :

5-111

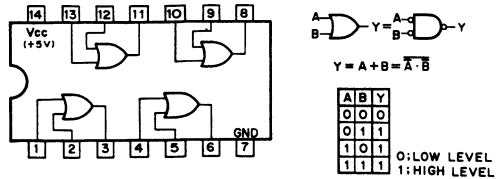
TC74HCT04AF (TOSHIBA) FLAT PACKAGE



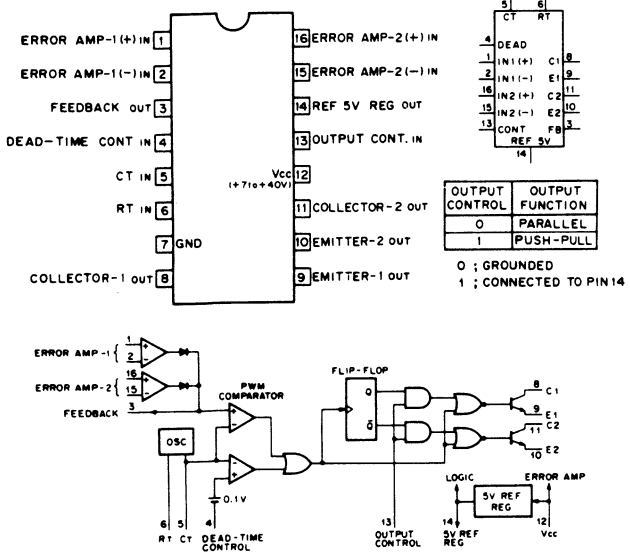
NOTE:

TYPE	VDD
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

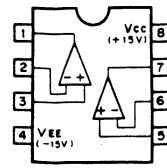
TC74HCT32FA
TTL 2-INPUT POSITIVE-OR GATE
— TOP VIEW —



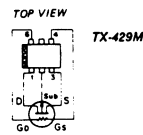
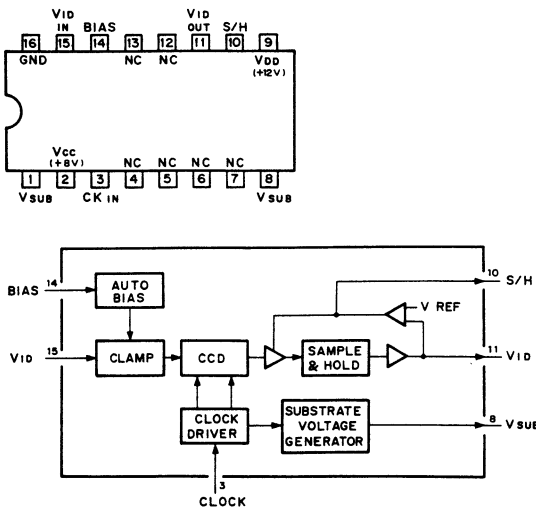
TL494CN (TI)
PWM POWER CONTROL
— TOP VIEW —



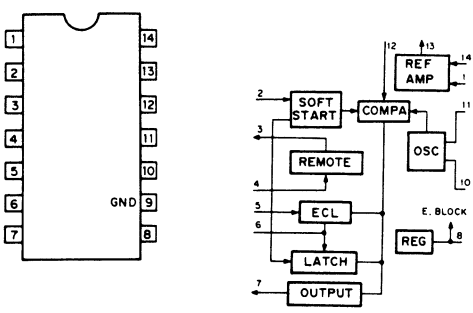
TL082ACP
TL082M
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



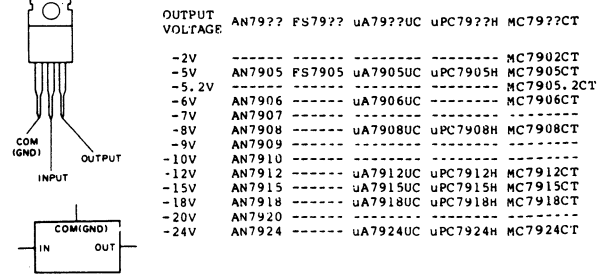
TL8608AP (TOSHIBA)
N-CH CCD ANALOG PROCESSING UNIT
— TOP VIEW —



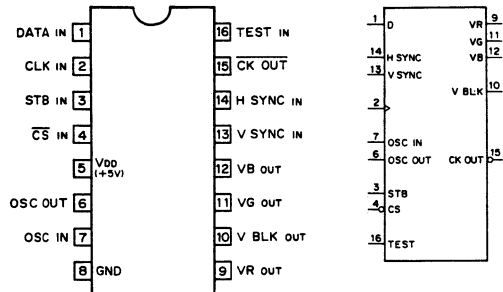
μPC1394C (NEC)
CONTROLLER OF SWITCHING MODE POWER SUPPLY
— TOP VIEW —



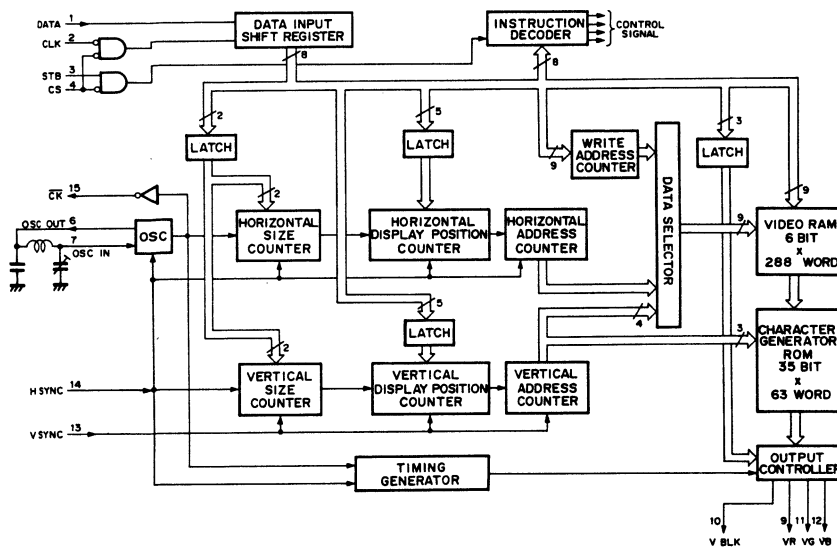
μPC7912H (NEC)
NEGATIVE VOLTAGE REGULATOR (1A)
— SIDE VIEW —



UPD6142G-101 (NEC) FLAT PACKAGE
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY
- TOP VIEW -



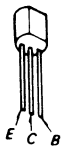
D: DATA INPUT
CK OUT: EQUAL TO OUTPUT OF OSC OUT
CLK: CLOCK INPUT
CS: CHIP SELECT INPUT
H SYNC: H SYNC INPUT
OSC IN, OUT: EXTERNAL TERMINAL FOR OSC
STB: STROBE INPUT
TEST: TEST CLOCK INPUT
VB: BLUE CHARACTER DATA OUTPUT
V BLK: V BLANKING OUTPUT
VG: GREEN CHARACTER DATA OUTPUT
VR: RED CHARACTER DATA OUTPUT
V SYNC: V SYNC INPUT



2SA812
2SA1162
2SA1226
2SC1623
2SC2757
2SC3624A
DTA144EK
DTC144EK



2SA844
2SA1091
2SC2551
2SC2878
2SC3068



2SA979
2SA1306



2SA1048
2SA1115
2SC2688
2SC403SP
DTA124ES
DTA144ES
DTC124ES
DTC143TS
DTC144ES
XDA124ES
XDA144ES
XDC124ES
XDC144ES



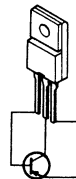
2SA1156
2SA1406
2SC3600



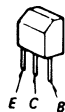
2SA1175
2SC2785



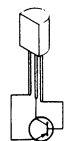
2SA1488



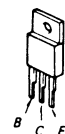
2SB734
2SD774



2SB740



2SB858
2SB861
2SC3675
2SD1134



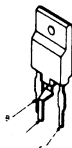
2SC2555



2SC2688
2SC2752
2SC3209
2SC3298
2SD669A



2SD1556



2SC3851



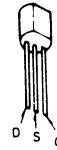
2SD789



2SK381
2SK514



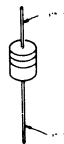
2SK523



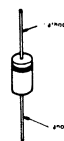
1S2835
1S2836
1S2837
MA152WK



1SS119
1S83
WG713A



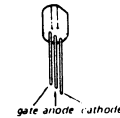
1SS148
10E2
GP08D
RD10EB
RD12EB
RD15EB
RD15ES
RD3.0EB
RD3.9EB
RD3.9ES
RD4.3EB
RD5.6EB
RD5.6ES
RD6.2EB
RD6.8EB
RD6.8ES
RD7.5ES
RD8.2ES
RD9.1EB
RD9.1ES
RU-3AM



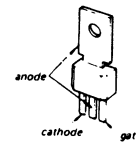
1T25



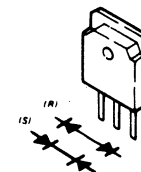
CR02AM-4
CR02AM-8



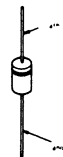
CR3CM-8



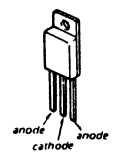
CTU-38R
CTU-38S



ERB44-06
ERB81-004
ERC04-24S
ERD28-04S
ERD28-08S
HZ12A
HZ12B
RH-1
RH-1A
RU-1A
RU-1C
SIB01-02



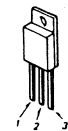
ESAC25-04C



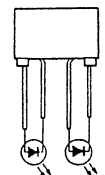
ESAC25-04D
ESAC25-04N



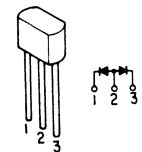
ESAC31-02D



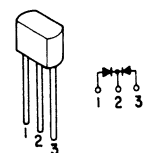
LT-9220H



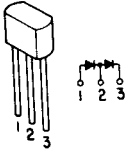
MC911



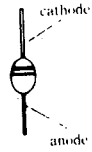
MC921



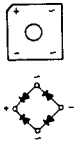
MC932



V11N



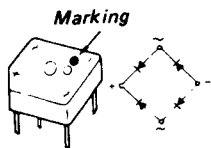
RB406N



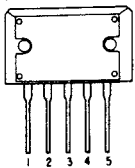
**RD5.6M
RD7.5M**



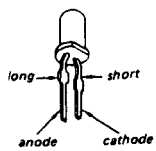
S3WB60Z



STR8124



**GL3HY3
TLG124A
TLR124
TLY124**



SECTION 6 EXPLODED VIEWS

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

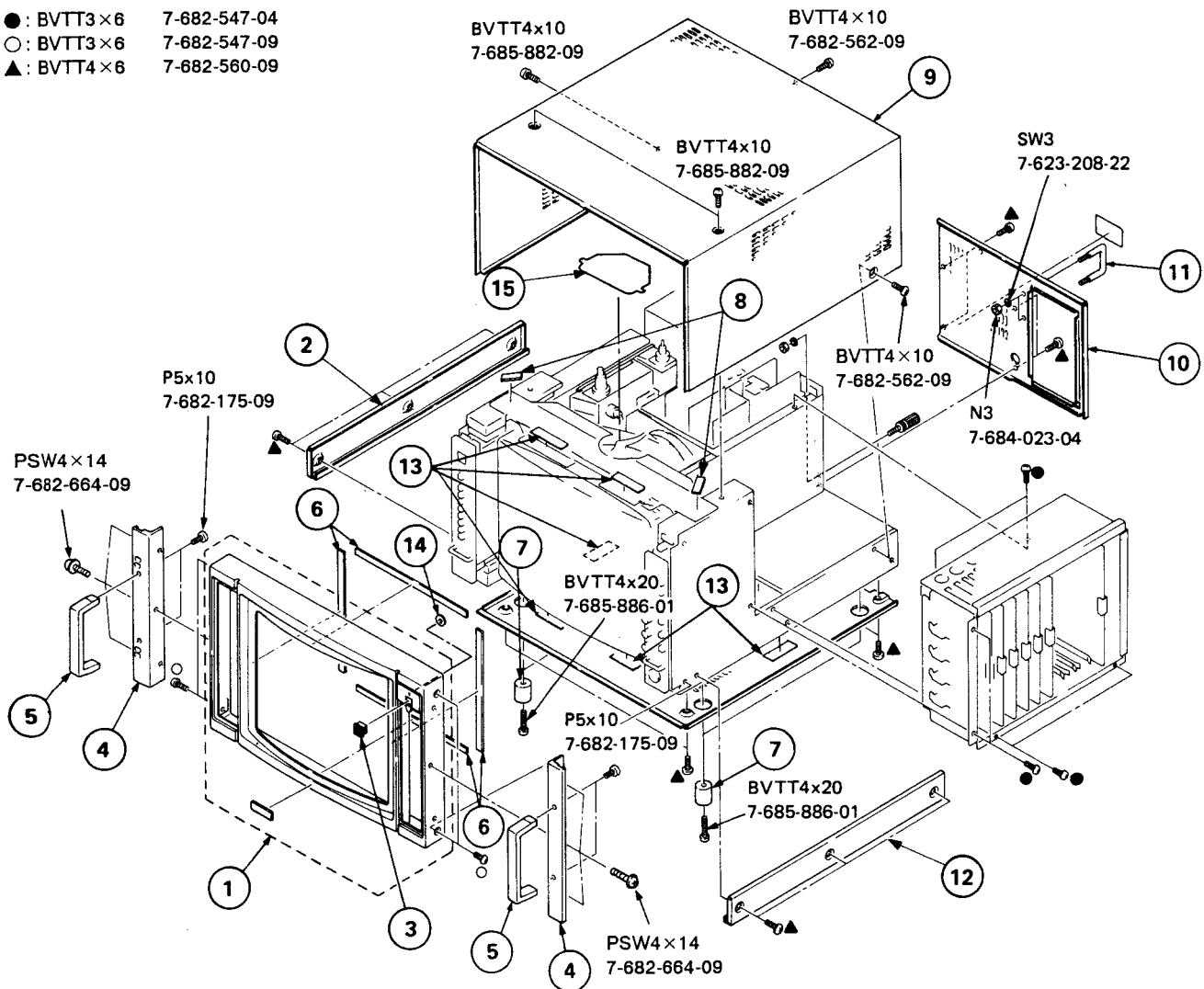
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **A** are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. BEZEL

- : BVTT3×6 7-682-547-04
- : BVTT3×6 7-682-547-09
- ▲: BVTT4×6 7-682-560-09

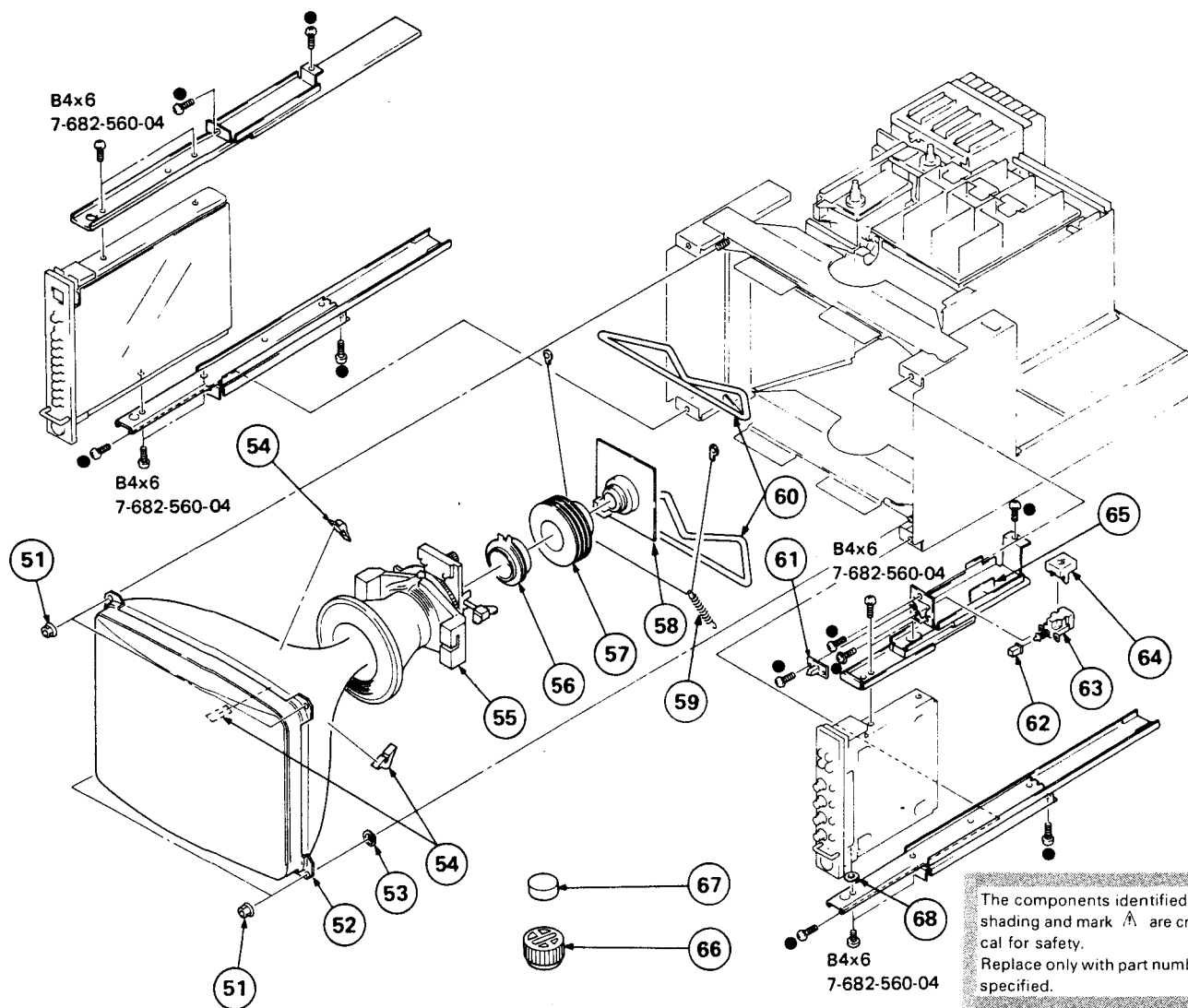


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4379-403-7	BEZEL ASSY	3, 6	9	*4-379-461-01	CABINET	
2	*4-379-452-01	PANEL (LEFT), SIDE		10	*4-379-450-01	COVER, BACK	
3	*4-379-423-01	ESCUTCHEON (A)		11	*4-379-476-01	PROTECTOR, CONNECTOR	
4	*4-391-207-01	BASE, HANDLE		12	*4-379-444-01	PANEL (RIGHT), SIDE	
5	*4-337-212-11	HANDLE		13	4-864-324-11	SPACER	
6	4-308-878-XX	CUSHION, (A) PICTURE TUBE		14	4-309-378-00	SPACER	
7	3-642-656-01	FOOT		15	*4-039-979-01	COVER, ANODE	
8	9-911-840-XX	DAMPER, CASE (LOWER)					

6-2. PICTURE TUBE

●: BVTT3×6 7-682-547-04

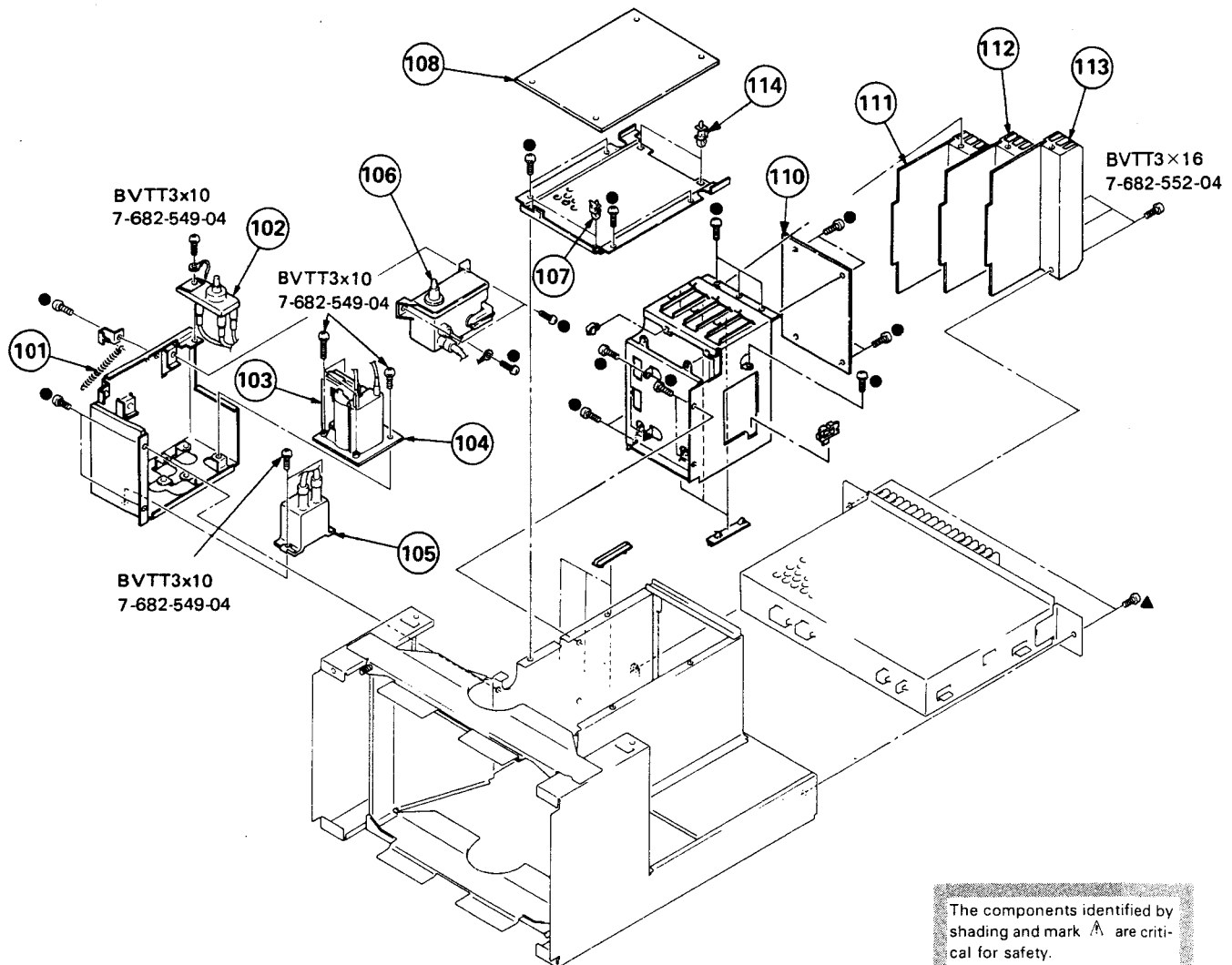
U. CATHODE VIEW



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-306-034-00	FLANGE NUT, (B) 5MM		60	Δ.1-426-263-11	COIL, DEMAGNETIZATION	
52	8-738-051-05	CRT (M34JNR20X)	(BVM-1311 ONLY)	61	*1-617-893-11	Y BOARD	
	8-738-052-05	CRT (M34JNR21X)	(BVM-1411P ONLY)	62	4-374-839-11	BUTTON (A)	
53	4-348-567-00	WASHER, CRT POSITION		63	Δ.1-570-052-12	SWITCH, PUSH (AC POWER) (1 KEY)	
54	3-703-961-01	SPACER, DY		64	4-373-038-01	COVER, SWITCH, POWER	
55	Δ.1-451-287-21	DEFLECTION YOKE (Y14FAA)		65	*9-911-844-XX	CUSHION, CONTROL BUTTON	
56	Δ.1-452-261-22	CRT NECK ASSY (362)		66	1-452-094-00	MAGNET, ROTABLE DISK; 15MM φ	
57	Δ.1-452-117-31	CRT NECK ASSY		67	1-452-032-00	MAGNET, DISK; 10MM φ	
58	*1-617-889-11	C BOARD		68	4-866-147-11	SPACER	
59	4-303-774-XX	SPRING					

6-3. CHASSIS

● : BVTT3×6 7-682-547-04
▲ : BVTT4×6 7-682-560-09



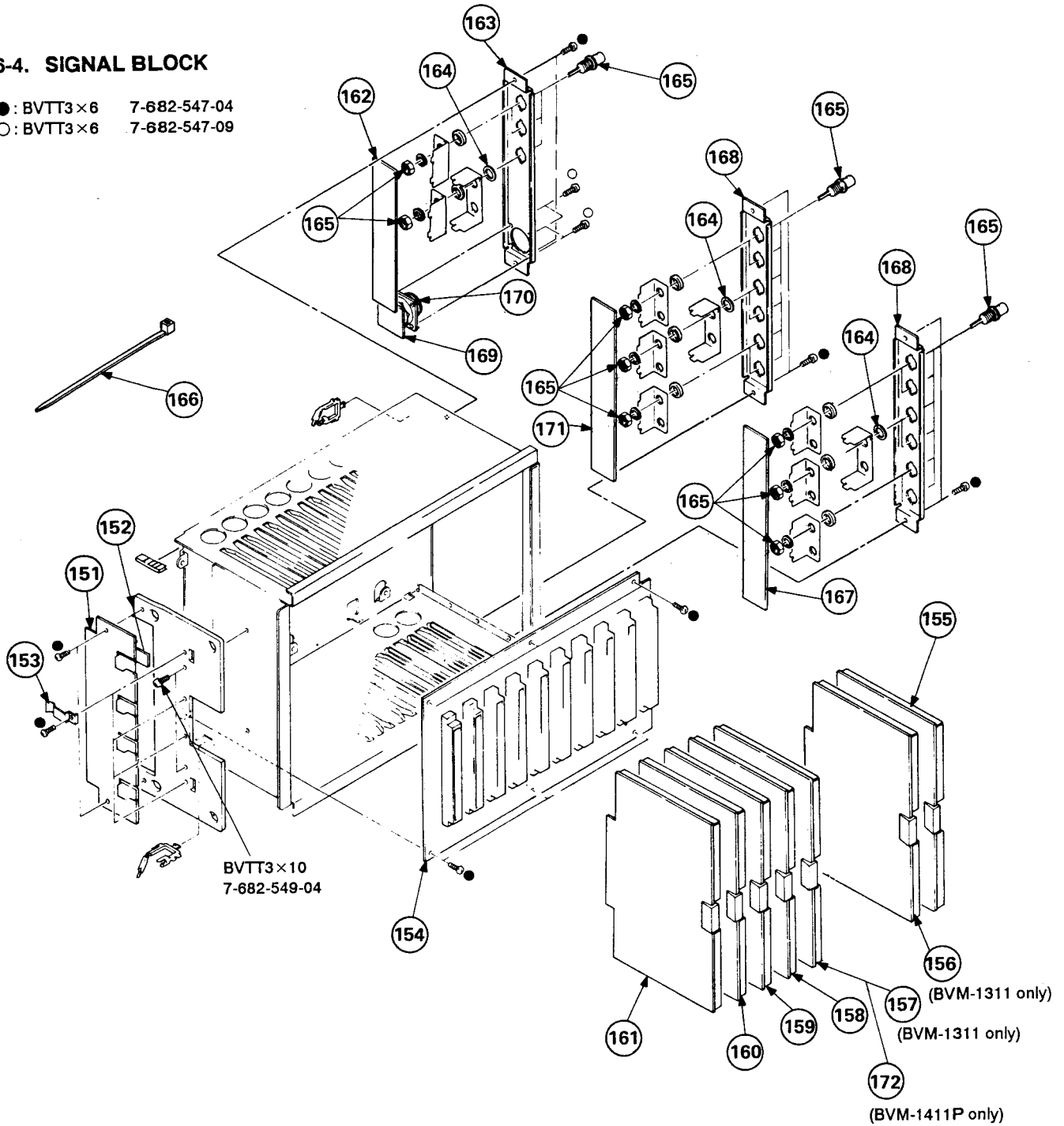
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
101	4-335-996-00	SPRING		108	*A-1135-362-A	BK BOARD, COMPLETE	
102	▲.1-237-165-12	RESISTOR ASSY, HIGH-VOLTAGE		110	*1-647-911-11	TA BOARD	
103	▲.1-439-382-21	TRANSFORMER ASSY, FLYBACK		111	*A-1346-028-A	EA BOARD, COMPLETE	
104	*1-617-891-21	PB BOARD		112	*A-1345-597-A	EB BOARD, COMPLETE	
105	▲.1-162-142-21	CAP BLOCK, HIGH VOLTAGE		113	*A-1345-598-A	PA BOARD, COMPLETE	
106	▲.1-453-103-41	HIGH-VOLTAGE BLOCK (HB-203(C))		114	*4-353-620-02	HINGE, PC BOARD	
107	*3-703-141-00	HOLDER, PCB					

6-4. SIGNAL BLOCK

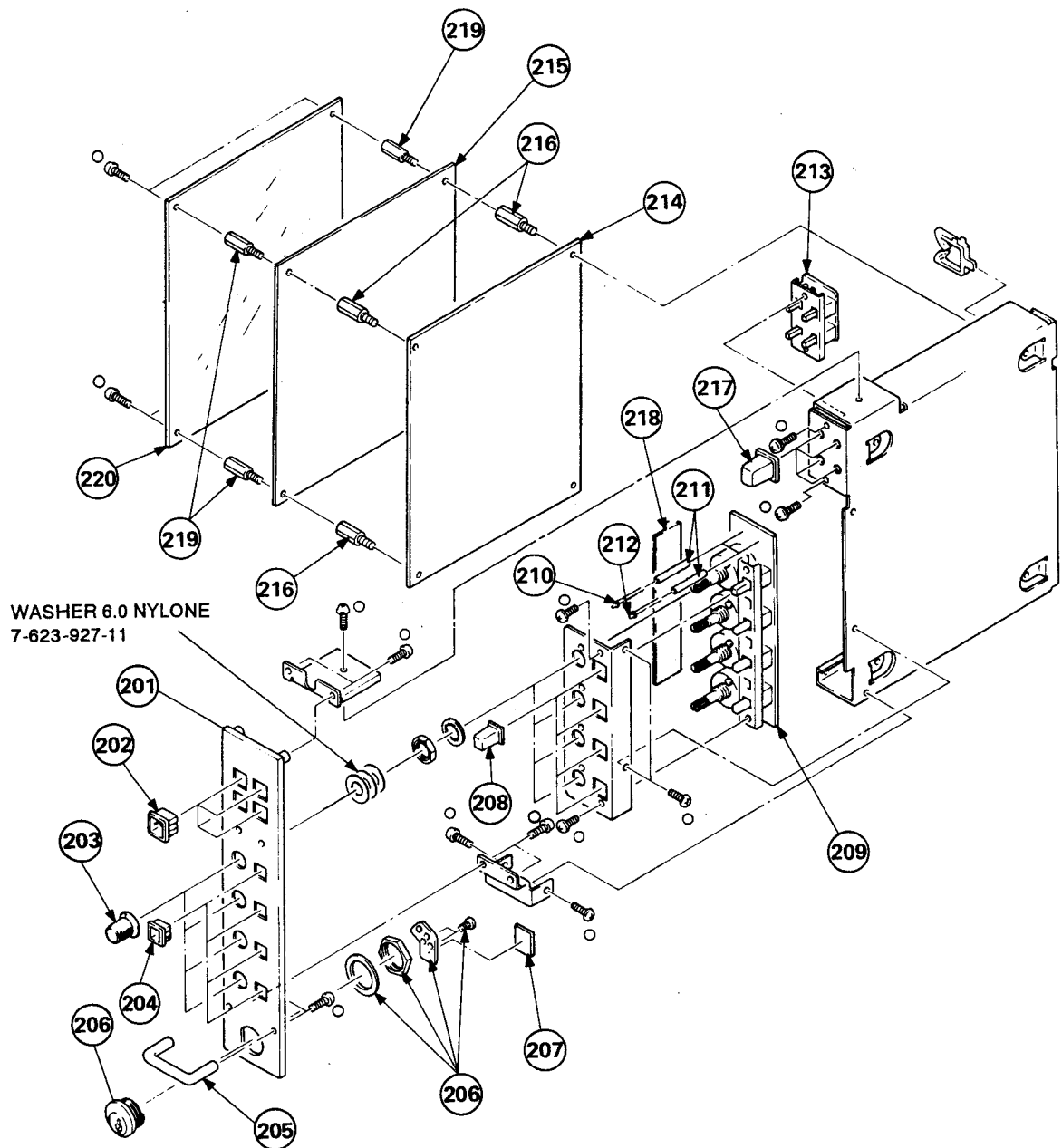
- : BVTT3×6 7-682-547-04
- : BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
151	*1-617-885-12	GC BOARD		161	*A-1135-361-A	BJ BOARD, COMPLETE	
152	4-370-970-01	SPACER, TR		162	*1-627-678-11	W BOARD	
153	*4-363-404-00	HOLDER, IC		163	*4-391-220-01	PANEL (C), CONNECTOR	
154	*A-1390-344-A	TB BOARD, COMPLETE		164	*4-379-404-01	INSULATOR, BNC	
155	*A-1135-355-A	BA BOARD, COMPLETE		165	1-565-791-11	CONNECTOR, BNC 1P	
156	*A-1135-606-B	BT BOARD, COMPLETE	(BVM-1311 ONLY)	166	*3-337-402-01	BAND, BINDING	
157	*A-1135-357-A	BC BOARD, COMPLETE	(BVM-1311 ONLY)	167	*1-617-895-11	QA BOARD	
158	*A-1135-358-A	BG BOARD, COMPLETE		168	*4-379-439-01	PANEL (A), CONNECTOR	
159	*A-1135-359-A	BH BOARD, COMPLETE		169	*1-627-677-11	V BOARD	
160	*A-1135-360-A	BI BOARD, COMPLETE		170	1-563-265-11	CONNECTOR, MULTIPLE 10P	
				171	*1-618-786-11	QB BOARD	
				172	*A-1135-391-A	BD BOARD, COMPLETE (BVM-1411P ONLY)	

6-5. DRAWER BLOCK (RIGHT)

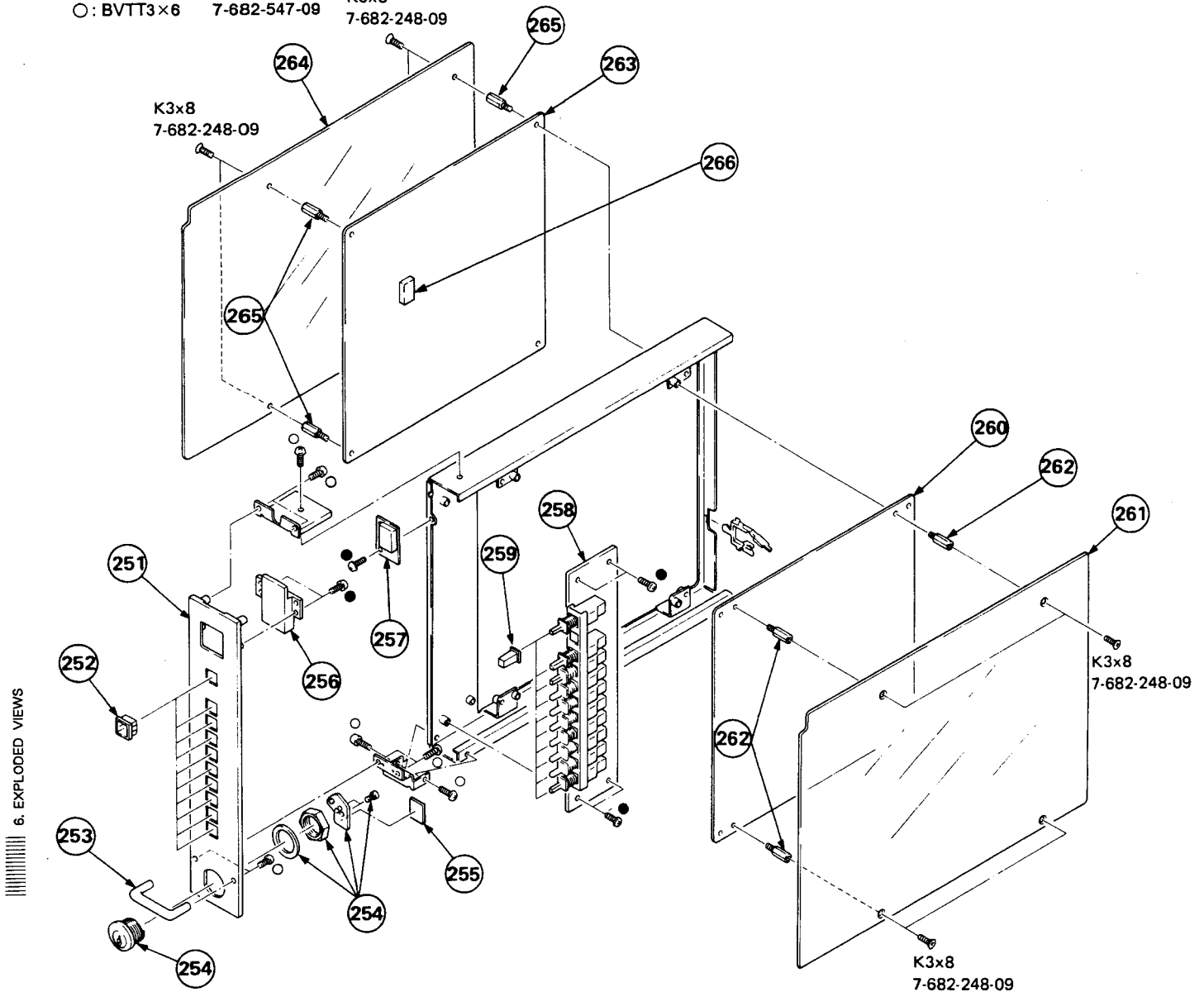
○: BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
201	4-379-453-21	PANEL (R), CONTROL		211	*4-026-910-00	HOLDER, LED	
202	4-379-423-11	ESCUTCHEON (A)		212	8-719-938-68	DIODE TLY124	
203	X-3673-635-0	KNOB (1) ASSY, CONTROL		213	*1-647-258-11	HX BOARD	
204	4-379-424-11	ESCUTCHEON (B)		214	A-1371-896-A	HZ BOARD, COMPLETE	
205	4-379-421-01	HANDLE, DRAWER		215	A-1375-114-A	HY BOARD, COMPLETE	
206	4-378-917-01	LOCK, CYLINDER		216	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
207	4-337-209-11	PROTECTOR, SCRATCH		217	4-039-982-01	BUTTON (U)	
208	4-379-422-01	BUTTON (B)		218	*1-627-682-11	HH BOARD	
209	*1-647-257-11	HW BOARD		219	*3-711-018-01	STAND OFF-BRAKE BAND GUIDE	
210	8-719-812-41	DIODE TLR124		220	*4-039-977-01	COVER, PC BOARD	

6-6. DRAWER BLOCK (LEFT)

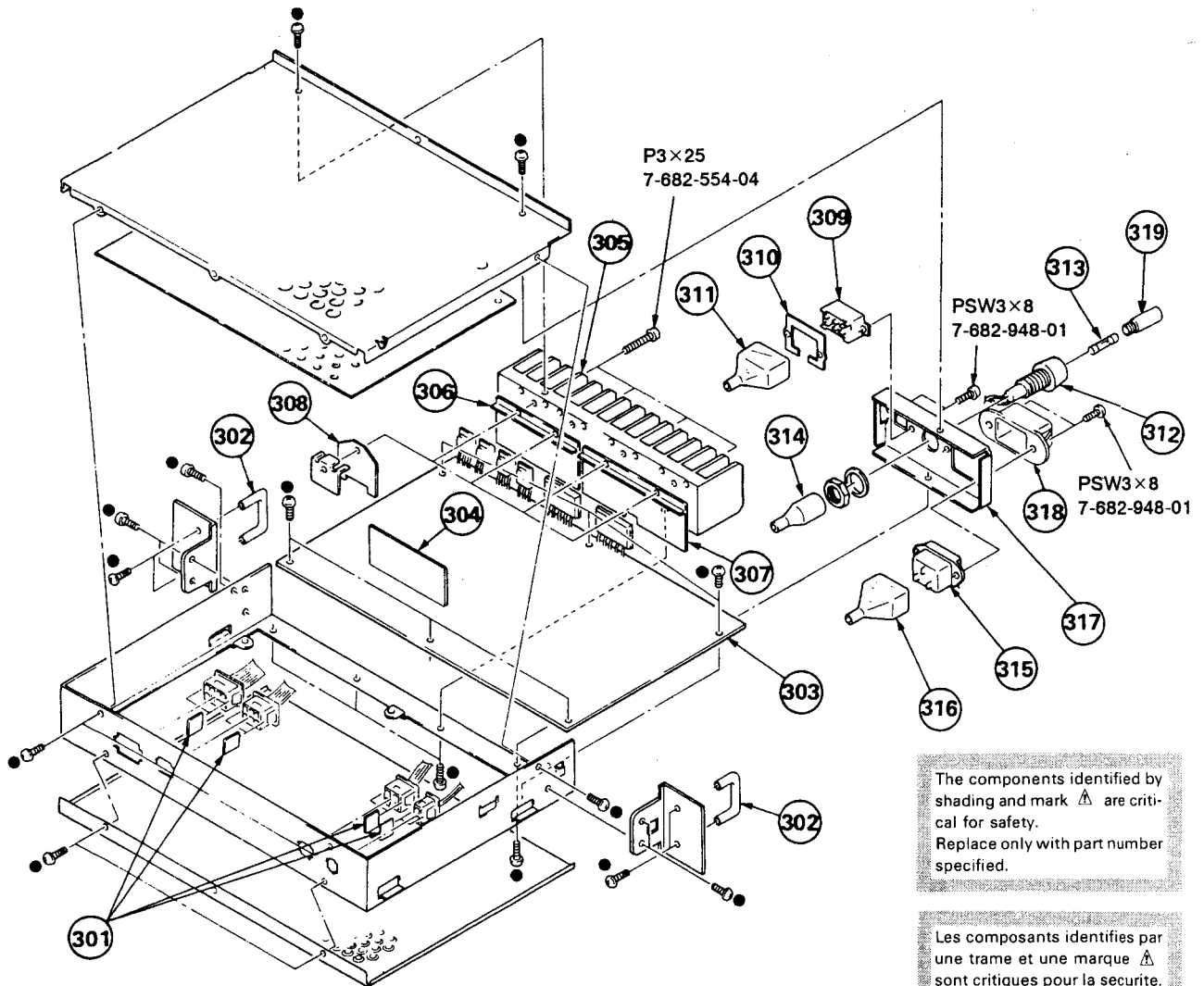
●: BVTT3×6 7-682-547-04 K3×8
○: BVTT3×6 7-682-547-09 7-682-248-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
251	4-379-454-11	PANEL (L), CONTROL		261	*4-379-481-01	COVER, DA PC BOARD	
252	4-379-423-01	ESCUTCHEON (A)		262	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
253	4-379-421-01	HANDLE, DRAWER		263	*A-1345-979-A	DB BOARD, COMPLETE	
254	4-378-917-01	LOCK, CYLINDER		264	*4-379-474-01	COVER, DB PC BOARD	
255	4-337-209-11	PROTECTOR, SCRATCH		265	*4-886-542-00	SUPPORT	
256	4-379-418-01	COVER, LAMP		266	9-911-841-XX	CUSHION	
257	*1-617-892-11	X BOARD					
258	*1-617-890-11	HA BOARD					
259	4-374-839-01	BUTTON (A)					
260	*A-1345-978-A	DA BOARD, COMPLETE					

6-7. POWER BLOCK

●: BVTT3×6 7-682-547-04



The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
301	3-675-469-00	SPACER, SOLENOID		310	*4-379-409-01	NUT, PLATE	
302	4-379-421-01	HANDLE, DRAWER		311	*4-371-879-02	COVER, AC SELECT	
303	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1311 ONLY)	304	312	1-533-167-21	HOLDER, FUSE	
303	*A-1316-090-A	GA BOARD, COMPLETE (BVM-1411P ONLY)		313	▲ 1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	(BVM-1311 ONLY)
304	*1-627-679-11	GB BOARD			▲ 1-532-203-11	FUSE, TIME-LAG (2A/250V) (BVM-1411P ONLY)	
305	*4-347-706-00	HEAT SINK (TR)		314	*4-393-031-01	COVER, FUSE HOLDER	
306	4-379-410-01	SPACER (G2), POLISHING		315	▲ 1-580-375-11	INLET 3P	
307	4-379-403-01	SPACER (G1), POLISHING		316	*4-601-466-11	COVER, 3P INLET	
308	*4-379-408-01	INSULATOR (G3)		317	*4-379-430-01	PANEL, POWER	
309	▲ 1-570-173-22	SWITCH, VOLTAGE CHANGE		318	2-990-241-02	HOLDER (A), PLUG	
				319	1-533-168-21	HOLDER, FUSE	

SECTION 7 ELECTRICAL PARTS LIST

BA

NOTE:

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

• All resistors are in ohms
• F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

• MF : μ F, PF : μ F

COILS

• MMH : mH, UH : μ H

• The components identified by $\boxtimes$ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1135-355-A	BA BOARD, COMPLETE *****		C35	1-126-966-11	ELECT 10MF 20% 16V	
	*4-353-708-00	HOOK, FINGER		C36	1-126-966-11	ELECT 10MF 20% 16V	
	8-729-119-78	TRANSISTOR 2SC2785-HFE		C37	1-126-966-11	ELECT 10MF 20% 16V	
				C38	1-126-966-11	ELECT 10MF 20% 16V	
				C39	1-101-004-00	CERAMIC 0.01MF 50V	
		<CONNECTOR>		C51	1-126-103-11	ELECT 470MF 20% 16V	
BA1	*1-566-054-11	PIN, CONNECTOR 2P		C52	1-126-101-11	ELECT 100MF 20% 16V	
BA2	*1-566-054-11	PIN, CONNECTOR 2P		C53	1-126-101-11	ELECT 100MF 20% 16V	
BA3	*1-566-054-11	PIN, CONNECTOR 2P		C54	1-126-101-11	ELECT 100MF 20% 16V	
BA4	*1-566-054-11	PIN, CONNECTOR 2P		C55	1-126-101-11	ELECT 100MF 20% 16V	
BA5	*1-566-054-11	PIN, CONNECTOR 2P		C56	1-126-101-11	ELECT 100MF 20% 16V	
BA6	*1-566-054-11	PIN, CONNECTOR 2P		C57	1-126-101-11	ELECT 100MF 20% 16V	
		<COMPOSITION CIRCUIT BLOCK>		C71	1-101-004-00	CERAMIC 0.01MF 50V	
C1	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C72	1-101-004-00	CERAMIC 0.01MF 50V	
C2	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C73	1-101-004-00	CERAMIC 0.01MF 50V	
C3	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C74	1-101-004-00	CERAMIC 0.01MF 50V	
C4	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C75	1-101-004-00	CERAMIC 0.01MF 50V	
C5	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C76	1-101-004-00	CERAMIC 0.01MF 50V	
C6	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C77	1-101-004-00	CERAMIC 0.01MF 50V	
C7	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C101	1-102-038-00	CERAMIC 0.001MF 500V	
		<CAPACITOR>		C102	1-126-966-11	ELECT 10MF 20% 16V	
C1	1-124-910-11	ELECT 47MF 20% 16V		C103	1-102-951-00	CERAMIC 15PF 5% 50V	
C2	1-124-910-11	ELECT 47MF 20% 16V		C104	1-124-902-00	ELECT 0.47MF 20% 50V	
C3	1-124-910-11	ELECT 47MF 20% 16V		C201	1-102-038-00	CERAMIC 0.001MF 500V	
C4	1-126-966-11	ELECT 10MF 20% 16V		C202	1-126-966-11	ELECT 10MF 20% 16V	
C5	1-124-910-11	ELECT 47MF 20% 16V		C203	1-102-951-00	CERAMIC 15PF 5% 50V	
C6	1-124-910-11	ELECT 47MF 20% 16V		C204	1-124-902-00	ELECT 0.47MF 20% 50V	
C7	1-124-910-11	ELECT 47MF 20% 16V		C301	1-102-038-00	CERAMIC 0.001MF 500V	
C8	1-124-910-11	ELECT 47MF 20% 16V		C302	1-126-966-11	ELECT 10MF 20% 16V	
C9	1-101-004-00	CERAMIC 0.01MF 50V		C303	1-102-965-00	CERAMIC 39PF 5% 50V	
C10	1-101-004-00	CERAMIC 0.01MF 50V		C304	1-124-902-00	ELECT 0.47MF 20% 50V	
C11	1-126-103-11	ELECT 470MF 20% 16V		C305	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
C12	1-126-101-11	ELECT 100MF 20% 16V		C306	1-102-942-00	CERAMIC 5PF 1PF 50V	
C13	1-126-101-11	ELECT 100MF 20% 16V		C401	1-102-038-00	CERAMIC 0.001MF 500V	
C14	1-126-101-11	ELECT 100MF 20% 16V		C402	1-126-966-11	ELECT 10MF 20% 16V	
C15	1-126-101-11	ELECT 100MF 20% 16V		C403	1-102-951-00	CERAMIC 15PF 5% 50V	
C16	1-126-101-11	ELECT 100MF 20% 16V		C404	1-124-902-00	ELECT 0.47MF 20% 50V	
C17	1-126-101-11	ELECT 100MF 20% 16V		C501	1-102-038-00	CERAMIC 0.001MF 500V	
C18	1-126-966-11	ELECT 10MF 20% 16V		C502	1-126-966-11	ELECT 10MF 20% 16V	
C19	1-126-966-11	ELECT 10MF 20% 16V		C503	1-102-951-00	CERAMIC 15PF 5% 50V	
C20	1-101-004-00	CERAMIC 0.01MF 50V		C504	1-124-902-00	ELECT 0.47MF 20% 50V	
C21	1-101-006-00	CERAMIC 0.047MF 50V		C601	1-102-038-00	CERAMIC 0.001MF 500V	
C31	1-101-004-00	CERAMIC 0.01MF 50V		C602	1-126-966-11	ELECT 10MF 20% 16V	
C32	1-126-966-11	ELECT 10MF 20% 16V		C603	1-102-951-00	CERAMIC 15PF 5% 50V	
C33	1-126-966-11	ELECT 10MF 20% 16V		C604	1-124-902-00	ELECT 0.47MF 20% 50V	
C34	1-126-966-11	ELECT 10MF 20% 16V		C701	1-102-976-00	CERAMIC 180PF 5% 50V	
				C702	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
				C703	1-126-966-11	ELECT 10MF 20% 16V	
				C704	1-124-910-11	ELECT 47MF 20% 16V	
				C705	1-136-153-00	FILM 0.01MF 50V	

BA

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C706	1-124-903-11	ELECT 1MF	20% 50V	Q205	8-729-266-82	TRANSISTOR 2SC2668-0	
C707	1-123-369-00	ELECT 4.7MF	20% 25V	Q301	8-729-266-82	TRANSISTOR 2SC2668-0	
C708	1-126-966-11	ELECT 10MF	20% 16V	Q302	8-729-266-82	TRANSISTOR 2SC2668-0	
C709	1-102-973-00	CERAMIC 100PF	5% 50V	Q303	8-729-266-82	TRANSISTOR 2SC2668-0	
C710	1-130-481-00	MYLAR 0.0068MF	5% 50V	Q304	8-729-384-48	TRANSISTOR 2SA844-E	
C711	1-136-155-00	FILM 0.015MF	5% 50V	Q305	8-729-266-82	TRANSISTOR 2SC2668-0	
C712	1-130-471-00	MYLAR 0.001MF	5% 50V	Q401	8-729-266-82	TRANSISTOR 2SC2668-0	
C713	1-124-903-11	ELECT 1MF	20% 50V	Q402	8-729-266-82	TRANSISTOR 2SC2668-0	
C714	1-102-973-00	CERAMIC 100PF	5% 50V	Q403	8-729-266-82	TRANSISTOR 2SC2668-0	
C715	1-101-361-00	CERAMIC 150PF	5% 50V	Q404	8-729-384-48	TRANSISTOR 2SA844-E	
C716	1-136-153-00	FILM 0.01MF	5% 50V	Q405	8-729-266-82	TRANSISTOR 2SC2668-0	
C717	1-102-973-00	CERAMIC 100PF	5% 50V	Q501	8-729-266-82	TRANSISTOR 2SC2668-0	
<TRIMMER>				Q502	8-729-266-82	TRANSISTOR 2SC2668-0	
CV101	1-141-179-12	CAP, VAR, TRIMMER		Q503	8-729-266-82	TRANSISTOR 2SC2668-0	
CV102	1-141-260-00	TRIMAR, CERAMIC		Q504	8-729-384-48	TRANSISTOR 2SA844-E	
CV201	1-141-179-12	CAP, VAR, TRIMMER		Q505	8-729-266-82	TRANSISTOR 2SC2668-0	
CV202	1-141-260-00	TRIMAR, CERAMIC		Q601	8-729-266-82	TRANSISTOR 2SC2668-0	
CV401	1-141-179-12	CAP, VAR, TRIMMER		Q602	8-729-266-82	TRANSISTOR 2SC2668-0	
CV402	1-141-260-00	TRIMAR, CERAMIC		Q603	8-729-266-82	TRANSISTOR 2SC2668-0	
CV501	1-141-179-12	CAP, VAR, TRIMMER		Q604	8-729-384-48	TRANSISTOR 2SA844-E	
CV502	1-141-260-00	TRIMAR, CERAMIC		Q605	8-729-266-82	TRANSISTOR 2SC2668-0	
CV601	1-141-179-12	CAP, VAR, TRIMMER		Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE	
CV602	1-141-260-00	TRIMAR, CERAMIC		Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<DIODE>				Q703	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D1	8-719-109-63	DIODE RD3.0ESB2		Q704	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D2	8-719-000-06	DIODE MC921		Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D4	8-719-000-04	DIODE MC911		Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D701	8-719-911-19	DIODE ISS119		Q707	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D702	8-719-109-75	DIODE RD4.3ESB2		Q708	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D703	8-719-911-19	DIODE ISS119		Q709	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D704	8-719-911-19	DIODE ISS119		Q710	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D705	8-719-911-19	DIODE ISS119		Q711	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D706	8-719-911-19	DIODE ISS119		Q712	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D707	8-719-911-19	DIODE ISS119		Q713	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D708	8-719-911-19	DIODE ISS119		Q714	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D709	8-719-911-19	DIODE ISS119		Q715	8-729-800-10	TRANSISTOR 2SC3068	
D710	8-719-911-19	DIODE ISS119		Q716	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<IC>				Q717	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC1	8-759-208-94	IC CX-894		<RESISTOR>			
IC2	8-759-208-94	IC CX-894		R1	1-249-405-11	CARBON 100 5% 1/4W	
IC3	8-759-140-53	IC UPD4053BC		R2	1-249-405-11	CARBON 100 5% 1/4W	
<TRANSISTOR>				R3	1-249-405-11	CARBON 100 5% 1/4W	
Q1	8-729-900-89	TRANSISTOR DTC144ES		R4	1-249-437-11	CARBON 47K 5% 1/4W	
Q2	8-729-384-48	TRANSISTOR 2SA844-E		R5	1-249-405-11	CARBON 100 5% 1/4W	
Q3	8-729-900-89	TRANSISTOR DTC144ES		R6	1-249-432-11	CARBON 18K 5% 1/4W	
Q4	8-729-900-89	TRANSISTOR DTC144ES		R7	1-249-434-11	CARBON 27K 5% 1/4W	
Q5	8-729-900-89	TRANSISTOR DTC144ES		R8	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q6	8-729-900-65	TRANSISTOR DTA144ES		R9	1-249-405-11	CARBON 100 5% 1/4W	
Q101	8-729-266-82	TRANSISTOR 2SC2668-0		R10	1-249-405-11	CARBON 100 5% 1/4W	
Q102	8-729-266-82	TRANSISTOR 2SC2668-0		R11	1-249-433-11	CARBON 22K 5% 1/4W	
Q103	8-729-266-82	TRANSISTOR 2SC2668-0		R12	1-249-405-11	CARBON 100 5% 1/4W	
Q104	8-729-384-48	TRANSISTOR 2SA844-E		R13	1-249-437-11	CARBON 47K 5% 1/4W	
Q105	8-729-266-82	TRANSISTOR 2SC2668-0		R14	1-249-429-11	CARBON 10K 5% 1/4W	
Q201	8-729-266-82	TRANSISTOR 2SC2668-0		R101	1-249-417-11	CARBON 1K 5% 1/4W	
Q202	8-729-266-82	TRANSISTOR 2SC2668-0		R102	1-249-418-11	CARBON 1.2K 5% 1/4W	
Q203	8-729-266-82	TRANSISTOR 2SC2668-0		R103	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q204	8-729-384-48	TRANSISTOR 2SA844-E		R104	1-249-405-11	CARBON 100 5% 1/4W	
				R105	1-215-437-00	METAL 4.7K 1% 1/4W	
				R106	1-249-430-11	CARBON 12K 5% 1/4W	
				R107	1-249-433-11	CARBON 22K 5% 1/4W	
				R108	1-215-427-00	METAL 1.8K 1% 1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R109	1-215-415-00	METAL	560 1% 1/4W	R608	1-215-427-00	METAL	1.8K 1% 1/4W
R110	1-249-405-11	CARBON	100 5% 1/4W	R609	1-215-415-00	METAL	560 1% 1/4W
R111	1-215-431-00	METAL	2.7K 1% 1/4W	R610	1-249-405-11	CARBON	100 5% 1/4W
R112	1-249-421-11	CARBON	2.2K 5% 1/4W	R611	1-215-431-00	METAL	2.7K 1% 1/4W
R113	1-249-393-11	CARBON	10 5% 1/4W	R612	1-249-421-11	CARBON	2.2K 5% 1/4W
R201	1-249-417-11	CARBON	1K 5% 1/4W	R613	1-249-393-11	CARBON	10 5% 1/4W
R202	1-249-418-11	CARBON	1.2K 5% 1/4W	R701	1-249-433-11	CARBON	22K 5% 1/4W
R203	1-249-425-11	CARBON	4.7K 5% 1/4W	R702	1-249-438-11	CARBON	56K 5% 1/4W
R204	1-249-405-11	CARBON	100 5% 1/4W	R703	1-249-417-11	CARBON	1K 5% 1/4W
R205	1-215-437-00	METAL	4.7K 1% 1/4W	R704	1-249-417-11	CARBON	1K 5% 1/4W
R206	1-249-430-11	CARBON	12K 5% 1/4W	R705	1-249-424-11	CARBON	3.9K 5% 1/4W
R207	1-249-433-11	CARBON	22K 5% 1/4W	R706	1-249-417-11	CARBON	1K 5% 1/4W
R208	1-215-427-00	METAL	1.8K 1% 1/4W	R707	1-249-429-11	CARBON	10K 5% 1/4W
R209	1-215-415-00	METAL	560 1% 1/4W	R708	1-249-421-11	CARBON	2.2K 5% 1/4W
R210	1-249-405-11	CARBON	100 5% 1/4W	R709	1-249-419-11	CARBON	1.5K 5% 1/4W
R211	1-215-431-00	METAL	2.7K 1% 1/4W	R710	1-249-418-11	CARBON	1.2K 5% 1/4W
R212	1-249-421-11	CARBON	2.2K 5% 1/4W	R711	1-249-434-11	CARBON	27K 5% 1/4W
R213	1-249-393-11	CARBON	10 5% 1/4W	R712	1-249-433-11	CARBON	22K 5% 1/4W
R301	1-249-417-11	CARBON	1K 5% 1/4W	R713	1-249-422-11	CARBON	2.7K 5% 1/4W
R302	1-249-418-11	CARBON	1.2K 5% 1/4W	R714	1-249-427-11	CARBON	6.8K 5% 1/4W
R303	1-249-426-11	CARBON	5.6K 5% 1/4W	R715	1-249-433-11	CARBON	22K 5% 1/4W
R304	1-249-405-11	CARBON	100 5% 1/4W	R716	1-249-422-11	CARBON	2.7K 5% 1/4W
R305	1-249-426-11	CARBON	5.6K 5% 1/4W	R717	1-249-425-11	CARBON	4.7K 5% 1/4W
R306	1-249-430-11	CARBON	12K 5% 1/4W	R718	1-249-410-11	CARBON	270 5% 1/4W
R307	1-249-432-11	CARBON	18K 5% 1/4W	R719	1-249-414-11	CARBON	560 5% 1/4W
R308	1-249-421-11	CARBON	2.2K 5% 1/4W	R720	1-247-850-11	CARBON	6.2K 5% 1/4W
R309	1-249-417-11	CARBON	1K 5% 1/4W	R721	1-249-438-11	CARBON	56K 5% 1/4W
R310	1-249-405-11	CARBON	100 5% 1/4W	R722	1-249-441-11	CARBON	100K 5% 1/4W
R311	1-249-417-11	CARBON	1K 5% 1/4W	R723	1-249-437-11	CARBON	47K 5% 1/4W
R312	1-249-421-11	CARBON	2.2K 5% 1/4W	R724	1-249-429-11	CARBON	10K 5% 1/4W
R313	1-249-393-11	CARBON	10 5% 1/4W	R725	1-249-438-11	CARBON	56K 5% 1/4W
R401	1-249-417-11	CARBON	1K 5% 1/4W	R726	1-247-895-00	CARBON	470K 5% 1/4W
R402	1-249-418-11	CARBON	1.2K 5% 1/4W	R727	1-249-425-11	CARBON	4.7K 5% 1/4W
R403	1-249-425-11	CARBON	4.7K 5% 1/4W	R728	1-249-435-11	CARBON	33K 5% 1/4W
R404	1-249-405-11	CARBON	100 5% 1/4W	R729	1-249-423-11	CARBON	3.3K 5% 1/4W
R405	1-215-437-00	METAL	4.7K 1% 1/4W	R730	1-249-421-11	CARBON	2.2K 5% 1/4W
R406	1-249-430-11	CARBON	12K 5% 1/4W	R731	1-249-422-11	CARBON	2.7K 5% 1/4W
R407	1-249-433-11	CARBON	22K 5% 1/4W	R732	1-249-422-11	CARBON	2.7K 5% 1/4W
R408	1-215-427-00	METAL	1.8K 1% 1/4W	R733	1-249-421-11	CARBON	2.2K 5% 1/4W
R409	1-215-415-00	METAL	560 1% 1/4W	R734	1-249-421-11	CARBON	2.2K 5% 1/4W
R410	1-249-405-11	CARBON	100 5% 1/4W	R735	1-249-421-11	CARBON	2.2K 5% 1/4W
R411	1-215-431-00	METAL	2.7K 1% 1/4W	R736	1-249-425-11	CARBON	4.7K 5% 1/4W
R412	1-249-421-11	CARBON	2.2K 5% 1/4W	R737	1-249-405-11	CARBON	100 5% 1/4W
R413	1-249-393-11	CARBON	10 5% 1/4W	R738	1-249-441-11	CARBON	100K 5% 1/4W
R501	1-249-417-11	CARBON	1K 5% 1/4W	R739	1-249-433-11	CARBON	22K 5% 1/4W
R502	1-249-418-11	CARBON	1.2K 5% 1/4W	R740	1-249-417-11	CARBON	1K 5% 1/4W
R503	1-249-425-11	CARBON	4.7K 5% 1/4W	R741	1-202-473-00	SOLID	5.6M 5% 1/4W
R504	1-249-405-11	CARBON	100 5% 1/4W	R906	1-249-389-11	CARBON	4.7 5% 1/4W
R505	1-215-437-00	METAL	4.7K 1% 1/4W	R907	1-249-389-11	CARBON	4.7 5% 1/4W
R506	1-249-430-11	CARBON	12K 5% 1/4W				
R507	1-249-433-11	CARBON	22K 5% 1/4W				
R508	1-215-427-00	METAL	1.8K 1% 1/4W				
R509	1-215-415-00	METAL	560 1% 1/4W				
R510	1-249-405-11	CARBON	100 5% 1/4W				
R511	1-215-431-00	METAL	2.7K 1% 1/4W				
R512	1-249-421-11	CARBON	2.2K 5% 1/4W				
R513	1-249-393-11	CARBON	10 5% 1/4W				
R601	1-249-417-11	CARBON	1K 5% 1/4W				
R602	1-249-418-11	CARBON	1.2K 5% 1/4W				
R603	1-249-425-11	CARBON	4.7K 5% 1/4W				
R604	1-249-405-11	CARBON	100 5% 1/4W				
R605	1-215-437-00	METAL	4.7K 1% 1/4W				
R606	1-249-430-11	CARBON	12K 5% 1/4W				
R607	1-249-433-11	CARBON	22K 5% 1/4W				

<VARIABLE RESISTOR>

RV101	1-237-514-21	RES, ADJ, CERMET 500
RV201	1-237-514-21	RES, ADJ, CERMET 500
RV401	1-237-514-21	RES, ADJ, CERMET 500
RV501	1-237-514-21	RES, ADJ, CERMET 500
RV601	1-237-514-21	RES, ADJ, CERMET 500

BC

IIIIIIII 7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
*****				C136	1-101-004-00	CERAMIC	0.01MF 50V
*A-1135-357-A BC BOARD, COMPLETE (BVM-1311 ONLY)				C137	1-101-004-00	CERAMIC	0.01MF 50V
*****				C138	1-101-004-00	CERAMIC	0.01MF 50V
*4-353-708-00 HOOK, FINGER				C139	1-101-004-00	CERAMIC	0.01MF 50V
<CAPACITOR>				C143	1-101-004-00	CERAMIC	0.01MF 50V
C1	1-102-951-00	CERAMIC	15PF 5% 50V	C144	1-126-233-11	ELECT	22MF 20% 25V
C2	1-102-951-00	CERAMIC	15PF 5% 50V	C201	1-124-917-11	ELECT	33MF 20% 25V
C3	1-102-947-00	CERAMIC	10PF 0.5PF 50V	C202	1-101-004-00	CERAMIC	0.01MF 50V
C4	1-101-880-00	CERAMIC	47PF 5% 50V	<TRIMMER>			
C5	1-102-965-00	CERAMIC	39PF 5% 50V	CV1	1-141-171-00	CAP, TRIMMER	15P
C6	1-101-004-00	CERAMIC	0.01MF 50V	CV2	1-141-171-00	CAP, TRIMMER	15P
C7	1-102-935-00	CERAMIC	2PF 0.25PF 50V	<DIODE>			
C8	1-101-361-00	CERAMIC	39PF 5% 50V	D1	8-719-911-19	DIODE	1SS119
C9	1-126-966-11	ELECT	10MF 20% 16V	D2	8-719-920-95	DIODE	1T25-0
C10	1-126-966-11	ELECT	10MF 20% 16V	D3	8-719-911-19	DIODE	1SS119
C11	1-101-004-00	CERAMIC	0.01MF 50V	D4	8-719-110-13	DIODE	RD9.1ESB2
C12	1-101-004-00	CERAMIC	0.01MF 50V	D5	8-719-911-19	DIODE	1SS119
C13	1-101-004-00	CERAMIC	0.01MF 50V	D6	8-719-911-19	DIODE	1SS119
C14	1-101-004-00	CERAMIC	0.01MF 50V	D7	8-719-911-19	DIODE	1SS119
C15	1-124-910-11	ELECT	47MF 20% 16V	<IC>			
C16	1-124-910-11	ELECT	47MF 20% 16V	IC1	8-759-204-21	IC	TA7193P
C17	1-124-034-51	ELECT	33MF 20% 16V	IC2	8-752-006-12	IC	CX20061
C18	1-101-004-00	CERAMIC	0.01MF 50V	IC3	8-759-140-53	IC	UPD4053BC
C19	1-102-953-00	CERAMIC	18PF 5% 50V	<COIL>			
C20	1-102-951-00	CERAMIC	15PF 5% 50V	L1	1-408-533-00	COIL, VARIABLE	
C22	1-101-884-00	CERAMIC	56PF 5% 50V	L2	1-408-513-00	COIL (VARIABLE)	
C23	1-123-369-00	ELECT	4.7MF 20% 25V	L3	1-408-533-00	COIL, VARIABLE	
C24	1-163-157-00	FILM	0.022MF 5% 50V	L4	1-408-429-00	INDUCTOR	470UH
C25	1-163-157-00	FILM	0.022MF 5% 50V	L5	1-408-429-00	INDUCTOR	470UH
C26	1-101-004-00	CERAMIC	0.01MF 50V	L6	1-408-429-00	INDUCTOR	470UH
C27	1-101-004-00	CERAMIC	0.01MF 50V	<TRANSISTOR>			
C28	1-124-902-00	ELECT	0.47MF 20% 50V	Q1	8-729-119-78	TRANSISTOR	2SC2785-HFE
C29	1-101-004-00	CERAMIC	0.01MF 50V	Q2	8-729-119-78	TRANSISTOR	2SC2785-HFE
C30	1-101-004-00	CERAMIC	0.01MF 50V	Q3	8-729-119-78	TRANSISTOR	2SC2785-HFE
C31	1-124-119-00	ELECT	330MF 20% 16V	Q4	8-729-800-10	TRANSISTOR	2SC3068
C34	1-109-676-00	MICA	130PF 1% 500V	Q5	8-729-800-10	TRANSISTOR	2SC3068
C35	1-109-631-00	MICA	330PF 1% 500V	Q6	8-729-119-78	TRANSISTOR	2SC2785-HFE
C36	1-102-960-00	CERAMIC	24PF 5% 50V	Q7	8-729-119-78	TRANSISTOR	2SC2785-HFE
C39	1-109-676-00	MICA	130PF 1% 500V	Q8	8-729-119-78	TRANSISTOR	2SC2785-HFE
C40	1-109-631-00	MICA	330PF 1% 500V	Q9	8-729-384-48	TRANSISTOR	2SA844-E
C41	1-102-960-00	CERAMIC	24PF 5% 50V	Q10	8-729-119-78	TRANSISTOR	2SC2785-HFE
C42	1-101-004-00	CERAMIC	0.01MF 50V	Q11	8-729-384-48	TRANSISTOR	2SA844-E
C50	1-102-942-00	CERAMIC	5PF 0.5PF 50V	Q12	8-729-119-78	TRANSISTOR	2SC2785-HFE
C101	1-124-034-51	ELECT	33MF 20% 16V	Q13	8-729-384-48	TRANSISTOR	2SA844-E
C102	1-101-004-00	CERAMIC	0.01MF 50V	Q14	8-729-384-48	TRANSISTOR	2SA844-E
C103	1-124-917-11	ELECT	33MF 20% 25V	Q15	8-729-119-78	TRANSISTOR	2SC2785-HFE
C104	1-124-034-51	ELECT	33MF 20% 16V	Q16	8-729-119-78	TRANSISTOR	2SC2785-HFE
C105	1-101-004-00	CERAMIC	0.01MF 50V	Q17	8-729-119-78	TRANSISTOR	2SC2785-HFE
C106	1-124-917-11	ELECT	33MF 20% 25V	Q18	8-729-800-10	TRANSISTOR	2SC3068
C107	1-101-004-00	CERAMIC	0.01MF 50V	Q19	8-729-119-78	TRANSISTOR	2SC2785-HFE
C111	1-124-034-51	ELECT	33MF 20% 16V	Q20	8-729-119-78	TRANSISTOR	2SC2785-HFE
C112	1-124-034-51	ELECT	33MF 20% 16V	Q21	8-729-800-10	TRANSISTOR	2SC3068
C113	1-124-034-51	ELECT	33MF 20% 16V	Q101	8-729-140-97	TRANSISTOR	2SB734-34
C116	1-101-004-00	CERAMIC	0.01MF 50V	Q103	8-729-900-63	TRANSISTOR	DTA124ES
C117	1-101-004-00	CERAMIC	0.01MF 50V	Q104	8-729-900-63	TRANSISTOR	DTA124ES
C118	1-101-004-00	CERAMIC	0.01MF 50V				
C121	1-124-034-51	ELECT	33MF 20% 16V				
C122	1-124-034-51	ELECT	33MF 20% 16V				
C123	1-124-034-51	ELECT	33MF 20% 16V				
C126	1-101-004-00	CERAMIC	0.01MF 50V				
C127	1-101-004-00	CERAMIC	0.01MF 50V				
C128	1-101-004-00	CERAMIC	0.01MF 50V				
C131	1-124-034-51	ELECT	33MF 20% 16V				
C132	1-124-034-51	ELECT	33MF 20% 16V				
C133	1-124-034-51	ELECT	33MF 20% 16V				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>							
R1	1-249-428-11	CARBON	8.2K 5% 1/4W	R64	1-249-429-11	CARBON	10K 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W	R65	1-215-421-00	METAL	1K 1% 1/4W
R3	1-249-405-11	CARBON	100 5% 1/4W	R68	1-249-427-11	CARBON	6.8K 5% 1/4W
R4	1-249-422-11	CARBON	2.7K 5% 1/4W	R69	1-215-420-00	METAL	910 1% 1/4W
R5	1-215-421-00	METAL	1K 1% 1/4W	R70	1-215-420-00	METAL	910 1% 1/4W
R6	1-215-398-00	METAL	110 1% 1/4W	R71	1-215-417-00	METAL	680 1% 1/4W
R7	1-249-405-11	CARBON	100 5% 1/4W	R72	1-249-422-11	CARBON	2.7K 5% 1/4W
R8	1-215-421-00	METAL	1K 1% 1/4W	R73	1-249-405-11	CARBON	100 5% 1/4W
R9	1-215-421-00	METAL	1K 1% 1/4W	R74	1-215-421-00	METAL	1K 1% 1/4W
R10	1-215-423-00	METAL	1.2K 1% 1/4W	R77	1-249-427-11	CARBON	6.8K 5% 1/4W
R11	1-249-405-11	CARBON	100 5% 1/4W	R78	1-215-420-00	METAL	910 1% 1/4W
R12	1-215-425-00	METAL	1.5K 1% 1/4W	R79	1-215-420-00	METAL	910 1% 1/4W
R13	1-215-425-00	METAL	1.5K 1% 1/4W	R80	1-215-417-00	METAL	680 1% 1/4W
R14	1-215-405-00	METAL	220 1% 1/4W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R15	1-249-405-11	CARBON	100 5% 1/4W	R82	1-249-405-11	CARBON	100 5% 1/4W
R16	1-249-433-11	CARBON	22K 5% 1/4W	R83	1-215-481-00	METAL	330K 1% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R85	1-215-429-00	METAL	2.2K 1% 1/4W
R18	1-249-421-11	CARBON	2.2K 5% 1/4W	R86	1-215-415-00	METAL	560 1% 1/4W
R19	1-249-425-11	CARBON	4.7K 5% 1/4W	R87	1-215-477-00	METAL	220K 1% 1/4W
R20	1-249-429-11	CARBON	10K 5% 1/4W	R88	1-215-457-00	METAL	33K 1% 1/4W
R22	1-249-429-11	CARBON	10K 5% 1/4W	R90	1-249-429-11	CARBON	10K 5% 1/4W
R23	1-249-431-11	CARBON	15K 5% 1/4W	R91	1-249-433-11	CARBON	22K 5% 1/4W
R24	1-249-428-11	CARBON	8.2K 5% 1/4W	R95	1-249-429-11	CARBON	10K 5% 1/4W
R25	1-249-405-11	CARBON	100 5% 1/4W	R96	1-249-433-11	CARBON	22K 5% 1/4W
R26	1-249-417-11	CARBON	1K 5% 1/4W	R101	1-249-423-11	CARBON	3.3K 5% 1/4W
R27	1-249-405-11	CARBON	100 5% 1/4W	R102	1-249-419-11	CARBON	1.5K 5% 1/4W
R28	1-249-417-11	CARBON	1K 5% 1/4W	R103	1-249-427-11	CARBON	6.8K 5% 1/4W
R29	1-249-405-11	CARBON	100 5% 1/4W	R104	1-249-422-11	CARBON	2.7K 5% 1/4W
R30	1-249-425-11	CARBON	4.7K 5% 1/4W	R105	1-249-429-11	CARBON	10K 5% 1/4W
R31	1-249-425-11	CARBON	4.7K 5% 1/4W	R202	1-249-429-11	CARBON	10K 5% 1/4W
R32	1-249-433-11	CARBON	22K 5% 1/4W	<VARIABLE RESISTOR>			
R33	1-249-405-11	CARBON	100 5% 1/4W	RV1	1-237-500-21	RES. ADJ. CERMET 1K	
R34	1-215-425-00	METAL	1.5K 1% 1/4W	RV2	1-237-504-21	RES. ADJ. CERMET 20K	
R35	1-215-425-00	METAL	1.5K 1% 1/4W	RV3	1-237-499-21	RES. ADJ. CERMET 500	
R36	1-215-425-00	METAL	1.5K 1% 1/4W	RV4	1-237-501-21	RES. ADJ. CERMET 2K	
R37	1-215-425-00	METAL	1.5K 1% 1/4W	RV5	1-237-501-21	RES. ADJ. CERMET 2K	
R38	1-215-439-00	METAL	5.6K 1% 1/4W	<CRYSTAL>			
R39	1-215-469-00	METAL	100K 1% 1/4W	X1	1-567-505-11	OSCILLATOR, CRYSTAL	
R40	1-247-903-00	CARBON	1M 5% 1/4W	*****			
R41	1-249-427-11	CARBON	6.8K 5% 1/4W	*A-1135-358-A BG BOARD, COMPLETE			
R42	1-249-420-11	CARBON	1.8K 5% 1/4W	*****			
R43	1-249-415-11	CARBON	680 5% 1/4W	*4-353-708-00 HOOK, FINGER			
R44	1-249-418-11	CARBON	1.2K 5% 1/4W	<CAPACITOR>			
R45	1-249-422-11	CARBON	2.7K 5% 1/4W	C1	1-124-910-11	ELECT	47MF 20% 16V
R47	1-249-413-11	CARBON	470 5% 1/4W	C2	1-124-910-11	ELECT	47MF 20% 16V
R49	1-249-413-11	CARBON	470 5% 1/4W	C3	1-126-966-11	ELECT	10MF 20% 16V
R50	1-249-405-11	CARBON	100 5% 1/4W	C4	1-124-910-11	ELECT	47MF 20% 16V
R51	1-215-417-00	METAL	680 1% 1/4W	C7	1-101-004-00	CERAMIC	0.01MF 50V
R52	1-215-417-00	METAL	680 1% 1/4W	C8	1-101-004-00	CERAMIC	0.01MF 50V
R53	1-215-413-00	METAL	470 1% 1/4W	C9	1-101-004-00	CERAMIC	0.01MF 50V
R54	1-215-443-00	METAL	8.2K 1% 1/4W	C10	1-102-935-00	CERAMIC	2PF 0.25PF 50V
R55	1-249-421-11	CARBON	2.2K 5% 1/4W	C12	1-101-004-00	CERAMIC	0.01MF 50V
R56	1-249-441-11	CARBON	100K 5% 1/4W	C16	1-101-004-00	CERAMIC	0.01MF 50V
R57	1-249-417-11	CARBON	1K 5% 1/4W	C20	1-124-903-11	ELECT	1MF 20% 50V
R58	1-249-417-11	CARBON	1K 5% 1/4W	C22	1-101-004-00	CERAMIC	0.01MF 50V
R59	1-249-429-11	CARBON	10K 5% 1/4W	C26	1-101-004-00	CERAMIC	0.01MF 50V
R60	1-249-433-11	CARBON	22K 5% 1/4W	C32	1-101-004-00	CERAMIC	0.01MF 50V
R61	1-249-420-11	CARBON	1.8K 5% 1/4W				
R62	1-249-429-11	CARBON	10K 5% 1/4W				
R63	1-249-425-11	CARBON	4.7K 5% 1/4W				

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REF.NO. PART NO. DESCRIPTION			REMARK			REF.NO. PART NO. DESCRIPTION			REMARK		
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE				R15	1-247-903-00	CARBON	1M	5%	1/4W
Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE				R16	1-215-477-00	METAL	220K	1%	1/4W
Q24	8-729-600-19	TRANSISTOR 2SK381-A				R17	1-249-429-11	CARBON	10K	5%	1/4W
Q25	8-729-384-48	TRANSISTOR 2SA844-B									
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE				R18	1-249-429-11	CARBON	10K	5%	1/4W
						R19	1-249-417-11	CARBON	1K	5%	1/4W
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE				R20	1-215-421-00	METAL	1K	1%	1/4W
Q28	8-729-600-19	TRANSISTOR 2SK381-A				R21	1-215-421-00	METAL	1K	1%	1/4W
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE				R22	1-249-441-11	CARBON	100K	5%	1/4W
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE									
Q31	8-729-384-48	TRANSISTOR 2SA844-B				R23	1-215-409-00	METAL	330	1%	1/4W
						R24	1-215-380-00	METAL	20	1%	1/4W
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE				R25	1-215-380-00	METAL	20	1%	1/4W
Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE				R26	1-215-409-00	METAL	330	1%	1/4W
Q34	8-729-600-19	TRANSISTOR 2SK381-A				R27	1-249-429-11	CARBON	10K	5%	1/4W
Q35	8-729-384-48	TRANSISTOR 2SA844-B									
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE				R28	1-249-417-11	CARBON	1K	5%	1/4W
						R29	1-215-418-00	METAL	750	1%	1/4W
Q37	8-729-119-78	TRANSISTOR 2SC2785-HFE				R30	1-249-422-11	CARBON	2.7K	5%	1/4W
Q38	8-729-600-19	TRANSISTOR 2SK381-A				R31	1-249-405-11	CARBON	100	5%	1/4W
Q39	8-729-119-78	TRANSISTOR 2SC2785-HFE				R32	1-249-420-11	CARBON	1.8K	5%	1/4W
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE									
Q41	8-729-384-48	TRANSISTOR 2SA844-B				R33	1-249-429-11	CARBON	10K	5%	1/4W
						R34	1-249-428-11	CARBON	8.2K	5%	1/4W
Q42	8-729-384-48	TRANSISTOR 2SA844-B				R35	1-249-417-11	CARBON	1K	5%	1/4W
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE				R36	1-249-422-11	CARBON	2.7K	5%	1/4W
Q44	8-729-384-48	TRANSISTOR 2SA844-B				R37	1-249-405-11	CARBON	100	5%	1/4W
Q45	8-729-119-78	TRANSISTOR 2SC2785-HFE									
Q49	8-729-119-78	TRANSISTOR 2SC2785-HFE				R40	1-249-425-11	CARBON	4.7K	5%	1/4W
						R41	1-249-422-11	CARBON	2.7K	5%	1/4W
Q50	8-729-119-78	TRANSISTOR 2SC2785-HFE				R42	1-249-417-11	CARBON	1K	5%	1/4W
Q51	8-729-900-63	TRANSISTOR DTA124ES				R43	1-249-417-11	CARBON	1K	5%	1/4W
Q52	8-729-900-63	TRANSISTOR DTA124ES				R44	1-249-431-11	CARBON	15K	5%	1/4W
Q53	8-729-900-63	TRANSISTOR DTA124ES									
Q54	8-729-119-78	TRANSISTOR 2SC2785-HFE				R45	1-249-423-11	CARBON	3.3K	5%	1/4W
						R46	1-249-417-11	CARBON	1K	5%	1/4W
Q55	8-729-600-19	TRANSISTOR 2SK381-A				R47	1-249-423-11	CARBON	3.3K	5%	1/4W
Q56	8-729-900-63	TRANSISTOR DTA124ES				R48	1-249-422-11	CARBON	2.7K	5%	1/4W
Q57	8-729-900-63	TRANSISTOR DTA124ES				R49	1-249-405-11	CARBON	100	5%	1/4W
Q58	8-729-900-63	TRANSISTOR DTA124ES									
Q59	8-729-119-78	TRANSISTOR 2SC2785-HFE				R50	1-249-422-11	CARBON	2.7K	5%	1/4W
						R51	1-247-903-00	CARBON	1M	5%	1/4W
Q60	8-729-600-19	TRANSISTOR 2SK381-A				R52	1-247-866-11	CARBON	30K	5%	1/4W
Q71	8-729-384-48	TRANSISTOR 2SA844-B				R53	1-215-445-00	METAL	10K	1%	1/4W
Q72	8-729-119-78	TRANSISTOR 2SC2785-HFE				R54	1-249-420-11	CARBON	1.8K	5%	1/4W
Q73	8-729-119-78	TRANSISTOR 2SC2785-HFE									
Q74	8-729-384-48	TRANSISTOR 2SA844-B				R55	1-249-422-11	CARBON	2.7K	5%	1/4W
						R56	1-249-405-11	CARBON	100	5%	1/4W
Q75	8-729-800-10	TRANSISTOR 2SC3068				R57	1-249-422-11	CARBON	2.7K	5%	1/4W
Q76	8-729-900-63	TRANSISTOR DTA124ES				R58	1-249-422-11	CARBON	2.7K	5%	1/4W
Q77	8-729-900-63	TRANSISTOR DTA124ES				R59	1-249-422-11	CARBON	2.7K	5%	1/4W
Q78	8-729-900-89	TRANSISTOR DTC144ES									
Q81	8-729-384-48	TRANSISTOR 2SA844-B				R61	1-249-422-11	CARBON	2.7K	5%	1/4W
						R62	1-249-417-11	CARBON	1K	5%	1/4W
Q82	8-729-119-78	TRANSISTOR 2SC2785-HFE				R63	1-249-417-11	CARBON	1K	5%	1/4W
Q83	8-729-119-78	TRANSISTOR 2SC2785-HFE				R64	1-249-431-11	CARBON	15K	5%	1/4W
Q84	8-729-384-48	TRANSISTOR 2SA844-B				R65	1-249-423-11	CARBON	3.3K	5%	1/4W
Q85	8-729-800-10	TRANSISTOR 2SC3068									
<RESISTOR>						R66	1-249-417-11	CARBON	1K	5%	1/4W
R1	1-249-405-11	CARBON	100	5%	1/4W	R67	1-249-423-11	CARBON	3.3K	5%	1/4W
R2	1-215-396-00	METAL	91	1%	1/4W	R68	1-249-422-11	CARBON	2.7K	5%	1/4W
R3	1-215-431-00	METAL	2.7K	1%	1/4W	R69	1-249-405-11	CARBON	100	5%	1/4W
R4	1-249-419-11	CARBON	1.5K	5%	1/4W	R70	1-249-422-11	CARBON	2.7K	5%	1/4W
R6	1-249-405-11	CARBON	100	5%	1/4W						
						R71	1-247-903-00	CARBON	1M	5%	1/4W
R7	1-249-405-11	CARBON	100	5%	1/4W	R72	1-247-866-11	CARBON	30K	5%	1/4W
R8	1-249-429-11	CARBON	10K	5%	1/4W	R73	1-215-445-00	METAL	10K	1%	1/4W
R10	1-247-830-11	CARBON	910	5%	1/4W	R74	1-249-420-11	CARBON	1.8K	5%	1/4W
R11	1-249-417-11	CARBON	1K	5%	1/4W	R75	1-249-422-11	CARBON	2.7K	5%	1/4W
R12	1-249-417-11	CARBON	1K	5%	1/4W						
						R76	1-249-405-11	CARBON	100	5%	1/4W
R13	1-215-462-00	METAL	51K	1%	1/4W	R77	1-249-422-11	CARBON	2.7K	5%	1/4W
R14	1-249-426-11	CARBON	5.6K	5%	1/4W	R78	1-249-422-11	CARBON	2.7K	5%	1/4W
						R79	1-249-422-11	CARBON	2.7K	5%	1/4W
						R80	1-249-405-11	CARBON	100	5%	1/4W

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R81	1-249-422-11	CARBON	2.7K 5% 1/4W	R204	1-247-872-11	CARBON 51K 5% 1/4W	
R82	1-247-903-00	CARBON	1M 5% 1/4W			<VARIABLE RESISTOR>	
R83	1-249-420-11	CARBON	1.8K 5% 1/4W	RV1	1-237-514-21	RES, ADJ, CERMET 500	
R84	1-249-405-11	CARBON	100 5% 1/4W	RV2	1-237-508-21	RES, ADJ, CERMET 500K	
R85	1-247-866-11	CARBON	30K 5% 1/4W	RV3	1-237-498-21	RES, ADJ, CERMET 200	
				RV4	1-237-500-21	RES, ADJ, CERMET 1K	
R86	1-215-445-00	METAL	10K 1% 1/4W	RV5	1-237-500-21	RES, ADJ, CERMET 1K	
R87	1-249-422-11	CARBON	2.7K 5% 1/4W				
R88	1-215-430-00	METAL	2.4K 1% 1/4W	RV11	1-237-519-21	RES, ADJ, CERMET 20K	
R89	1-215-443-00	METAL	8.2K 1% 1/4W	RV12	1-237-519-21	RES, ADJ, CERMET 20K	
R90	1-249-430-11	CARBON	12K 5% 1/4W	RV13	1-237-519-21	RES, ADJ, CERMET 20K	
				RV14	1-237-519-21	RES, ADJ, CERMET 20K	
R91	1-249-405-11	CARBON	100 5% 1/4W	RV15	1-237-519-21	RES, ADJ, CERMET 20K	
R92	1-247-830-11	CARBON	910 5% 1/4W				
R93	1-215-421-00	METAL	1K 1% 1/4W	RV16	1-237-519-21	RES, ADJ, CERMET 20K	
R94	1-249-422-11	CARBON	2.7K 5% 1/4W	RV21	1-237-517-21	RES, ADJ, CERMET 5K	
R98	1-249-422-11	CARBON	2.7K 5% 1/4W	RV22	1-237-517-21	RES, ADJ, CERMET 5K	
						<SWITCH>	
R99	1-249-422-11	CARBON	2.7K 5% 1/4W	S1	1-570-857-11	SWITCH, SLIDE	
R101	1-249-432-11	CARBON	18K 5% 1/4W			*****	
R102	1-249-421-11	CARBON	2.2K 5% 1/4W			*A-1135-359-A BH BOARD, COMPLETE	
R103	1-249-421-11	CARBON	2.2K 5% 1/4W			*****	
R104	1-249-421-11	CARBON	2.2K 5% 1/4W			*4-353-708-00 HOOK, FINGER	
						<CAPACITOR>	
R105	1-249-433-11	CARBON	22K 5% 1/4W	C1	1-124-034-51	ELECT 33MF 20% 16V	
R106	1-249-429-11	CARBON	10K 5% 1/4W	C2	1-124-034-51	ELECT 33MF 20% 16V	
R107	1-249-429-11	CARBON	10K 5% 1/4W	C3	1-124-034-51	ELECT 33MF 20% 16V	
R108	1-249-405-11	CARBON	100 5% 1/4W	C4	1-124-034-51	ELECT 33MF 20% 16V	
R109	1-249-422-11	CARBON	2.7K 5% 1/4W	C5	1-124-034-51	ELECT 33MF 20% 16V	
R110	1-249-405-11	CARBON	100 5% 1/4W	C6	1-124-034-51	ELECT 33MF 20% 16V	
R111	1-249-435-11	CARBON	33K 5% 1/4W	C7	1-124-034-51	ELECT 33MF 20% 16V	
R112	1-249-421-11	CARBON	2.2K 5% 1/4W	C8	1-124-034-51	ELECT 33MF 20% 16V	
R113	1-249-421-11	CARBON	2.2K 5% 1/4W	C9	1-124-034-51	ELECT 33MF 20% 16V	
R114	1-249-421-11	CARBON	2.2K 5% 1/4W	C10	1-124-034-51	ELECT 33MF 20% 16V	
R115	1-249-433-11	CARBON	22K 5% 1/4W	C11	1-124-034-51	ELECT 33MF 20% 16V	
R116	1-249-429-11	CARBON	10K 5% 1/4W	C12	1-124-034-51	ELECT 33MF 20% 16V	
R117	1-249-429-11	CARBON	10K 5% 1/4W	C13	1-124-034-51	ELECT 33MF 20% 16V	
R118	1-249-405-11	CARBON	100 5% 1/4W	C14	1-124-034-51	ELECT 33MF 20% 16V	
R119	1-249-422-11	CARBON	2.7K 5% 1/4W	C15	1-101-004-00	CERAMIC 0.01MF 50V	
R120	1-249-405-11	CARBON	100 5% 1/4W	C16	1-101-004-00	CERAMIC 0.01MF 50V	
R161	1-215-438-00	METAL	5.1K 1% 1/4W	C17	1-101-004-00	CERAMIC 0.01MF 50V	
R162	1-249-431-11	CARBON	15K 5% 1/4W	C18	1-101-004-00	CERAMIC 0.01MF 50V	
R163	1-249-417-11	CARBON	1K 5% 1/4W	C20	1-123-382-00	ELECT 3.3MF 20% 50V	
R164	1-215-435-00	METAL	3.9K 1% 1/4W	C21	1-126-966-11	ELECT 10MF 20% 16V	
R165	1-249-422-11	CARBON	2.7K 5% 1/4W	C22	1-126-966-11	ELECT 10MF 20% 16V	
R166	1-249-422-11	CARBON	2.7K 5% 1/4W	C23	1-126-966-11	ELECT 10MF 20% 16V	
R167	1-215-413-00	METAL	470 1% 1/4W	C24	1-126-966-11	ELECT 10MF 20% 16V	
R168	1-215-416-00	METAL	620 1% 1/4W	C26	1-101-004-00	CERAMIC 0.01MF 50V	
R169	1-215-432-00	METAL	3K 1% 1/4W	C41	1-124-119-00	ELECT 330MF 20% 16V	
R170	1-249-425-11	CARBON	4.7K 5% 1/4W	C42	1-124-119-00	ELECT 330MF 20% 16V	
R171	1-215-436-00	METAL	4.3K 1% 1/4W	C43	1-124-119-00	ELECT 330MF 20% 16V	
R172	1-249-431-11	CARBON	15K 5% 1/4W	C44	1-126-966-11	ELECT 10MF 20% 16V	
R173	1-249-417-11	CARBON	1K 5% 1/4W	C45	1-126-966-11	ELECT 10MF 20% 16V	
R174	1-215-435-00	METAL	3.9K 1% 1/4W	C50	1-126-966-11	ELECT 10MF 20% 16V	
R175	1-249-422-11	CARBON	2.7K 5% 1/4W	C51	1-101-004-00	CERAMIC 0.01MF 50V	
R176	1-249-422-11	CARBON	2.7K 5% 1/4W	C52	1-101-004-00	CERAMIC 0.01MF 50V	
R177	1-215-413-00	METAL	470 1% 1/4W	C53	1-101-004-00	CERAMIC 0.01MF 50V	
R178	1-215-418-00	METAL	750 1% 1/4W	C54	1-101-004-00	CERAMIC 0.01MF 50V	
R179	1-215-425-00	METAL	1.5K 1% 1/4W				
R180	1-249-425-11	CARBON	4.7K 5% 1/4W				
R181	1-215-384-00	METAL	30 1% 1/4W				
R182	1-215-384-00	METAL	30 1% 1/4W				
R183	1-249-433-11	CARBON	22K 5% 1/4W				
R184	1-249-425-11	CARBON	4.7K 5% 1/4W				
R185	1-249-429-11	CARBON	10K 5% 1/4W				
R201	1-249-437-11	CARBON	47K 5% 1/4W				
R202	1-249-429-11	CARBON	10K 5% 1/4W				
R203	1-249-435-11	CARBON	33K 5% 1/4W				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C55	1-101-004-00	CERAMIC	0.01MF	50V	CP25	1-233-144-11	COMPOSITION CIRCUIT BLOCK
C71	1-124-119-00	ELECT	330MF	20%	16V	CP26	1-233-011-11
C72	1-124-119-00	ELECT	330MF	20%	16V	CP27	1-232-177-00
C73	1-124-119-00	ELECT	330MF	20%	16V	CP28	1-233-011-11
C74	1-126-966-11	ELECT	10MF	20%	16V	CP29	1-233-011-11
C80	1-126-966-11	ELECT	10MF	20%	16V	CP30	1-233-011-11
C81	1-101-004-00	CERAMIC	0.01MF	50V	CP31	1-233-011-11	COMPOSITION CIRCUIT BLOCK
C82	1-101-004-00	CERAMIC	0.01MF	50V	CP32	1-232-737-11	COMPOSITION CIRCUIT BLOCK
C83	1-101-004-00	CERAMIC	0.01MF	50V	CP33	1-231-938-00	COMPOSITION CIRCUIT BLOCK
C84	1-101-004-00	CERAMIC	0.01MF	50V	CP101	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C85	1-101-004-00	CERAMIC	0.01MF	50V	CP102	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C86	1-101-004-00	CERAMIC	0.01MF	50V	CP103	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C101	1-161-021-11	CERAMIC	0.047MF	10%	25V	CP104	1-232-726-11
C102	1-102-942-00	CERAMIC	5PF	0.5PF	50V	CP201	1-232-726-11
C103	1-102-959-00	CERAMIC	22PF	5%	50V	CP202	1-232-726-11
C104	1-126-966-11	ELECT	10MF	20%	16V	CP203	1-232-726-11
C105	1-161-021-11	CERAMIC	0.047MF	10%	25V	CP204	1-232-726-11
C106	1-101-004-00	CERAMIC	0.01MF	50V	CP301	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V	CP302	1-232-726-11
C108	1-101-004-00	CERAMIC	0.01MF	50V	CP303	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C109	1-101-004-00	CERAMIC	0.01MF	50V	CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK
C110	1-101-880-00	CERAMIC	47PF	5%	50V		
C201	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C202	1-102-942-00	CERAMIC	5PF	0.5PF	50V		
C203	1-102-959-00	CERAMIC	22PF	5%	50V		
C204	1-126-966-11	ELECT	10MF	20%	16V		
C205	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C206	1-101-004-00	CERAMIC	0.01MF	50V			
C207	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C208	1-101-004-00	CERAMIC	0.01MF	50V			
C209	1-101-004-00	CERAMIC	0.01MF	50V			
C210	1-101-880-00	CERAMIC	47PF	5%	50V		
C301	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C302	1-102-942-00	CERAMIC	5PF	0.5PF	50V		
C303	1-102-959-00	CERAMIC	22PF	5%	50V		
C304	1-126-966-11	ELECT	10MF	20%	16V		
C305	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C306	1-101-004-00	CERAMIC	0.01MF	50V			
C307	1-161-021-11	CERAMIC	0.047MF	10%	25V		
C308	1-101-004-00	CERAMIC	0.01MF	50V			
C309	1-101-004-00	CERAMIC	0.01MF	50V			
C310	1-101-880-00	CERAMIC	47PF	5%	50V		
<COMPOSITION CIRCUIT BLOCK>							
CP1	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP2	1-232-727-11	COMPOSITION CIRCUIT BLOCK					
CP3	1-233-012-11	COMPOSITION CIRCUIT BLOCK					
CP5	1-233-012-11	COMPOSITION CIRCUIT BLOCK					
CP7	1-233-012-11	COMPOSITION CIRCUIT BLOCK					
CP9	1-232-735-11	COMPOSITION CIRCUIT BLOCK					
CP10	1-231-760-00	COMPOSITION CIRCUIT BLOCK					
CP12	1-232-735-11	COMPOSITION CIRCUIT BLOCK					
CP13	1-231-760-00	COMPOSITION CIRCUIT BLOCK					
CP15	1-232-735-11	COMPOSITION CIRCUIT BLOCK					
CP16	1-232-749-11	COMPOSITION CIRCUIT BLOCK					
CP17	1-232-096-00	COMPOSITION CIRCUIT BLOCK					
CP18	1-233-011-11	COMPOSITION CIRCUIT BLOCK					
CP19	1-233-011-11	COMPOSITION CIRCUIT BLOCK					
CP20	1-232-736-11	COMPOSITION CIRCUIT BLOCK					
CP21	1-232-736-11	COMPOSITION CIRCUIT BLOCK					
CP22	1-232-745-11	COMPOSITION CIRCUIT BLOCK					
CP23	1-233-011-11	COMPOSITION CIRCUIT BLOCK					
CP24	1-233-011-11	COMPOSITION CIRCUIT BLOCK					
<DIODE>							
D1	8-719-911-19	DIODE 1SS119					
D101	8-719-911-19	DIODE 1SS119					
D102	8-719-911-19	DIODE 1SS119					
D201	8-719-911-19	DIODE 1SS119					
D202	8-719-911-19	DIODE 1SS119					
D301	8-719-911-19	DIODE 1SS119					
D302	8-719-911-19	DIODE 1SS119					
<IC>							
IC1	8-759-140-53	IC UPD4053BC					
IC2	8-759-140-53	IC UPD4053BC					
IC3	8-759-140-53	IC UPD4053BC					
IC4	8-759-140-53	IC UPD4053BC					
IC5	8-759-700-08	IC NJM4558S					
IC6	8-759-700-08	IC NJM4558S					
IC7	8-759-800-81	IC LA7016					
IC8	8-759-800-81	IC LA7016					
IC9	8-759-140-53	IC UPD4053BC					
IC10	8-759-140-53	IC UPD4053BC					
IC11	8-759-240-81	IC TC4081BP					
IC12	8-759-240-81	IC TC4081BP					
IC13	8-759-040-01	IC MC14001BCP					
IC14	8-759-207-73	IC TC4030BPHB					
IC101	8-766-001-49	TRANSISTOR TX-429M					
IC102	8-759-990-82	IC TL082CP					
IC201	8-766-001-49	TRANSISTOR TX-429M					
IC202	8-759-990-82	IC TL082CP					
IC301	8-766-001-49	TRANSISTOR TX-429M					
IC302	8-759-990-82	IC TL082CP					
<TRANSISTOR>							
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q2	8-729-105-71	TRANSISTOR 2SK523-K2					
Q3	8-729-384-48	TRANSISTOR 2SA844-E					
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q5	8-729-105-71	TRANSISTOR 2SK523-K2					
Q6	8-729-384-48	TRANSISTOR 2SA844-E					
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE					

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
Q8	8-729-105-71	TRANSISTOR 2SK523-K2		R63	1-249-417-11	CARBON 1K 5% 1/4W	
Q9	8-729-384-48	TRANSISTOR 2SA844-E		R64	1-249-437-11	CARBON 47K 5% 1/4W	
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE		R65	1-249-433-11	CARBON 22K 5% 1/4W	
Q11	8-729-105-71	TRANSISTOR 2SK523-K2		R66	1-249-417-11	CARBON 1K 5% 1/4W	
Q12	8-729-384-48	TRANSISTOR 2SA844-E		R101	1-247-903-00	CARBON 1M 5% 1/4W	
Q13	8-729-384-48	TRANSISTOR 2SA844-E		R102	1-249-431-11	CARBON 15K 5% 1/4W	
Q14	8-729-384-48	TRANSISTOR 2SA844-E		R103	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q15	8-729-384-48	TRANSISTOR 2SA844-E		R104	1-249-430-11	CARBON 12K 5% 1/4W	
Q16	8-729-800-10	TRANSISTOR 2SC3068		R105	1-249-409-11	CARBON 220 5% 1/4W	
Q101	8-729-600-19	TRANSISTOR 2SK381-A		R106	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q102	8-729-384-48	TRANSISTOR 2SA844-E		R107	1-215-425-00	METAL 1.5K 1% 1/4W	
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE		R108	1-249-415-11	CARBON 680 5% 1/4W	
Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE		R109	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE		R110	1-215-427-00	METAL 1.8K 1% 1/4W	
Q106	8-729-600-19	TRANSISTOR 2SK381-A		R111	1-215-453-00	METAL 22K 1% 1/4W	
Q107	8-729-600-19	TRANSISTOR 2SK381-A		R112	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q108	8-729-600-19	TRANSISTOR 2SK381-A		R113	1-249-405-11	CARBON 100 5% 1/4W	
Q201	8-729-600-19	TRANSISTOR 2SK381-A		R114	1-215-445-00	METAL 10K 1% 1/4W	
Q202	8-729-384-48	TRANSISTOR 2SA844-E		R115	1-215-445-00	METAL 10K 1% 1/4W	
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE		R116	1-249-429-11	CARBON 10K 5% 1/4W	
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE		R117	1-215-493-00	METAL 1M 1% 1/4W	
Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE		R120	1-215-451-00	METAL 18K 1% 1/4W	
Q206	8-729-600-19	TRANSISTOR 2SK381-A		R121	1-215-453-00	METAL 22K 1% 1/4W	
Q207	8-729-600-19	TRANSISTOR 2SK381-A		R201	1-247-903-00	CARBON 1M 5% 1/4W	
Q208	8-729-600-19	TRANSISTOR 2SK381-A		R202	1-249-431-11	CARBON 15K 5% 1/4W	
Q301	8-729-600-19	TRANSISTOR 2SK381-A		R203	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R204	1-249-430-11	CARBON 12K 5% 1/4W	
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE		R205	1-249-409-11	CARBON 220 5% 1/4W	
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE		R206	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE		R207	1-215-425-00	METAL 1.5K 1% 1/4W	
Q306	8-729-600-19	TRANSISTOR 2SK381-A		R208	1-249-415-11	CARBON 680 5% 1/4W	
Q307	8-729-600-19	TRANSISTOR 2SK381-A		R209	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q308	8-729-600-19	TRANSISTOR 2SK381-A		R210	1-215-427-00	METAL 1.8K 1% 1/4W	
<RESISTOR>				R211	1-215-453-00	METAL 22K 1% 1/4W	
R1	1-249-433-11	CARBON 22K 5% 1/4W		R212	1-249-419-11	CARBON 1.5K 5% 1/4W	
R3	1-249-427-11	CARBON 6.8K 5% 1/4W		R213	1-249-405-11	CARBON 100 5% 1/4W	
R5	1-249-422-11	CARBON 2.7K 5% 1/4W		R214	1-215-445-00	METAL 10K 1% 1/4W	
R6	1-249-433-11	CARBON 22K 5% 1/4W		R215	1-215-445-00	METAL 10K 1% 1/4W	
R7	1-249-433-11	CARBON 22K 5% 1/4W		R216	1-249-429-11	CARBON 10K 5% 1/4W	
R9	1-249-427-11	CARBON 6.8K 5% 1/4W		R217	1-215-455-00	METAL 27K 1% 1/4W	
R11	1-249-422-11	CARBON 2.7K 5% 1/4W		R301	1-247-903-00	CARBON 1M 5% 1/4W	
R12	1-249-433-11	CARBON 22K 5% 1/4W		R302	1-249-431-11	CARBON 15K 5% 1/4W	
R13	1-249-433-11	CARBON 22K 5% 1/4W		R303	1-249-419-11	CARBON 1.5K 5% 1/4W	
R15	1-249-427-11	CARBON 6.8K 5% 1/4W		R304	1-249-430-11	CARBON 12K 5% 1/4W	
R17	1-249-422-11	CARBON 2.7K 5% 1/4W		R305	1-249-409-11	CARBON 220 5% 1/4W	
R18	1-249-433-11	CARBON 22K 5% 1/4W		R306	1-249-419-11	CARBON 1.5K 5% 1/4W	
R19	1-249-433-11	CARBON 22K 5% 1/4W		R307	1-215-425-00	METAL 1.5K 1% 1/4W	
R21	1-249-427-11	CARBON 6.8K 5% 1/4W		R308	1-249-415-11	CARBON 680 5% 1/4W	
R23	1-249-422-11	CARBON 2.7K 5% 1/4W		R309	1-249-419-11	CARBON 1.5K 5% 1/4W	
R31	1-249-405-11	CARBON 100 5% 1/4W		R310	1-215-427-00	METAL 1.8K 1% 1/4W	
R32	1-249-405-11	CARBON 100 5% 1/4W		R311	1-215-453-00	METAL 22K 1% 1/4W	
R33	1-249-433-11	CARBON 22K 5% 1/4W		R312	1-249-419-11	CARBON 1.5K 5% 1/4W	
R34	1-249-422-11	CARBON 2.7K 5% 1/4W		R313	1-249-405-11	CARBON 100 5% 1/4W	
R35	1-249-405-11	CARBON 100 5% 1/4W		R314	1-215-445-00	METAL 10K 1% 1/4W	
R36	1-249-405-11	CARBON 100 5% 1/4W		R315	1-215-445-00	METAL 10K 1% 1/4W	
R37	1-249-433-11	CARBON 22K 5% 1/4W		R316	1-249-429-11	CARBON 10K 5% 1/4W	
R38	1-249-422-11	CARBON 2.7K 5% 1/4W		<VARIABLE RESISTOR>			
R39	1-249-433-11	CARBON 22K 5% 1/4W		RV1	1-237-505-21	RES, ADJ, CERMET 50K	
R40	1-249-422-11	CARBON 2.7K 5% 1/4W		RV2	1-237-505-21	RES, ADJ, CERMET 50K	
R52	1-249-417-11	CARBON 1K 5% 1/4W		RV3	1-237-505-21	RES, ADJ, CERMET 50K	
R53	1-249-425-11	CARBON 4.7K 5% 1/4W					
R54	1-249-441-11	CARBON 100K 5% 1/4W					

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<SWITCH>				C114	1-102-951-00	CERAMIC	15PF 5% 50V
S1	1-570-857-11	SWITCH, SLIDE		C115	1-136-153-00	FILM	0.01MF 5% 50V
S2	1-570-851-11	SWITCH, SLIDE		C116	1-102-973-00	CERAMIC	100PF 5% 50V
*****				C117	1-101-004-00	CERAMIC	0.01MF 50V
*A-1135-360-A	BI BOARD, COMPLETE			C118	1-101-004-00	CERAMIC	0.01MF 50V
*****				C119	1-102-953-00	CERAMIC	18PF 5% 50V
*4-353-708-00	HOOK, FINGER			C120	1-102-038-00	CERAMIC	0.001MF 500V
<CAPACITOR>				C122	1-102-943-00	CERAMIC	6PF 0.5PF 50V
C1	1-130-481-00	MYLAR	0.0068MF 5% 50V	C201	1-101-004-00	CERAMIC	0.01MF 50V
C2	1-136-165-00	FILM	0.1MF 5% 50V	C202	1-124-903-11	ELECT	1MF 20% 50V
C3	1-123-369-00	ELECT	4.7MF 20% 25V	C204	1-126-966-11	ELECT	10MF 20% 16V
C4	1-123-369-00	ELECT	4.7MF 20% 25V	C205	1-101-004-00	CERAMIC	0.01MF 50V
C5	1-102-973-00	CERAMIC	100PF 5% 50V	C206	1-136-161-00	FILM	0.047MF 5% 50V
C7	1-126-233-11	ELECT	22MF 20% 25V	C207	1-102-937-00	CERAMIC	4PF 0.25PF 50V
C8	1-123-369-00	ELECT	4.7MF 20% 25V	C208	1-101-880-00	CERAMIC	47PF 5% 50V
C11	1-126-966-11	ELECT	10MF 20% 16V	C209	1-136-161-00	FILM	0.047MF 5% 50V
C12	1-101-004-00	CERAMIC	0.01MF 50V	C210	1-136-161-00	FILM	0.047MF 5% 50V
C13	1-101-004-00	CERAMIC	0.01MF 50V	C214	1-102-951-00	CERAMIC	15PF 5% 50V
C14	1-101-004-00	CERAMIC	0.01MF 50V	C215	1-136-153-00	FILM	0.01MF 5% 50V
C15	1-126-233-11	ELECT	22MF 20% 16V	C216	1-102-973-00	CERAMIC	100PF 5% 50V
C16	1-126-966-11	ELECT	10MF 20% 16V	C217	1-101-004-00	CERAMIC	0.01MF 50V
C17	1-101-004-00	CERAMIC	0.01MF 50V	C218	1-101-004-00	CERAMIC	0.01MF 50V
C18	1-101-004-00	CERAMIC	0.01MF 50V	C219	1-102-953-00	CERAMIC	18PF 5% 50V
C19	1-101-004-00	CERAMIC	0.01MF 50V	C220	1-102-038-00	CERAMIC	0.001MF 500V
C41	1-124-034-51	ELECT	33MF 20% 16V	C222	1-102-943-00	CERAMIC	6PF 0.5PF 50V
C42	1-124-034-51	ELECT	33MF 20% 16V	C301	1-101-004-00	CERAMIC	0.01MF 50V
C43	1-124-034-51	ELECT	33MF 20% 16V	C302	1-124-903-11	ELECT	1MF 20% 50V
C44	1-124-034-51	ELECT	33MF 20% 16V	C304	1-126-966-11	ELECT	10MF 20% 16V
C45	1-124-034-51	ELECT	33MF 20% 16V	C305	1-101-004-00	CERAMIC	0.01MF 50V
C46	1-124-034-51	ELECT	33MF 20% 16V	C306	1-136-161-00	FILM	0.047MF 5% 50V
C51	1-101-004-00	CERAMIC	0.01MF 50V	C307	1-102-937-00	CERAMIC	4PF 0.25PF 50V
C52	1-101-004-00	CERAMIC	0.01MF 50V	C308	1-101-880-00	CERAMIC	47PF 5% 50V
C53	1-101-004-00	CERAMIC	0.01MF 50V	C309	1-136-161-00	FILM	0.047MF 5% 50V
C54	1-101-004-00	CERAMIC	0.01MF 50V	C310	1-136-161-00	FILM	0.047MF 5% 50V
C55	1-101-004-00	CERAMIC	0.01MF 50V	C314	1-102-951-00	CERAMIC	15PF 5% 50V
C56	1-101-004-00	CERAMIC	0.01MF 50V	C315	1-136-153-00	FILM	0.01MF 5% 50V
C57	1-101-004-00	CERAMIC	0.01MF 50V	C316	1-102-973-00	CERAMIC	100PF 5% 50V
C71	1-124-034-51	ELECT	33MF 20% 16V	C317	1-101-004-00	CERAMIC	0.01MF 50V
C72	1-124-034-51	ELECT	33MF 20% 16V	C318	1-101-004-00	CERAMIC	0.01MF 50V
C73	1-124-034-51	ELECT	33MF 20% 16V	C319	1-102-953-00	CERAMIC	18PF 5% 50V
C74	1-124-034-51	ELECT	33MF 20% 16V	C320	1-102-038-00	CERAMIC	0.001MF 500V
C75	1-124-034-51	ELECT	33MF 20% 16V	C322	1-102-943-00	CERAMIC	6PF 0.5PF 50V
C76	1-124-034-51	ELECT	33MF 20% 16V	<COMPOSITION CIRCUIT BLOCK>			
C81	1-101-004-00	CERAMIC	0.01MF 50V	CP3	1-231-765-00	COMPOSITION CIRCUIT BLOCK	
C82	1-101-004-00	CERAMIC	0.01MF 50V	CP4	1-231-765-00	COMPOSITION CIRCUIT BLOCK	
C83	1-101-004-00	CERAMIC	0.01MF 50V	CP5	1-231-765-00	COMPOSITION CIRCUIT BLOCK	
C84	1-101-004-00	CERAMIC	0.01MF 50V	CP6	1-231-765-00	COMPOSITION CIRCUIT BLOCK	
C85	1-101-004-00	CERAMIC	0.01MF 50V	CP7	1-231-765-00	COMPOSITION CIRCUIT BLOCK	
C86	1-101-004-00	CERAMIC	0.01MF 50V	CP101	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C87	1-101-004-00	CERAMIC	0.01MF 50V	CP102	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C101	1-101-004-00	CERAMIC	0.01MF 50V	CP103	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C102	1-124-903-11	ELECT	1MF 20% 50V	CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C104	1-126-966-11	ELECT	10MF 20% 16V	CP201	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C105	1-101-004-00	CERAMIC	0.01MF 50V	CP202	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C106	1-136-161-00	FILM	0.047MF 5% 50V	CP203	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C107	1-102-937-00	CERAMIC	4PF 0.25PF 50V	CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C108	1-101-880-00	CERAMIC	47PF 5% 50V	CP301	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C109	1-136-161-00	FILM	0.047MF 5% 50V	CP302	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C110	1-136-161-00	FILM	0.047MF 5% 50V	CP303	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
				CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<DIODE>				<RESISTOR>			
D1	8-719-911-19	DIODE 1SS119		Q114	8-729-200-17	TRANSISTOR 2SA1091-0	
D2	8-719-911-19	DIODE 1SS119		Q201	8-729-384-48	TRANSISTOR 2SA844-E	
D4	8-719-911-19	DIODE 1SS119		Q202	8-729-384-48	TRANSISTOR 2SA844-E	
D5	8-719-911-19	DIODE 1SS119		Q203	8-729-384-48	TRANSISTOR 2SA844-E	
D6	8-719-110-31	DIODE RD12ESB2		Q205	8-729-600-19	TRANSISTOR 2SK381-A	
				Q206	8-729-384-48	TRANSISTOR 2SA844-E	
D7	8-719-911-19	DIODE 1SS119		Q207	8-729-266-82	TRANSISTOR 2SC2668-0	
D8	8-719-911-19	DIODE 1SS119		Q208	8-729-384-48	TRANSISTOR 2SA844-E	
D101	8-719-911-19	DIODE 1SS119		Q209	8-729-600-19	TRANSISTOR 2SK381-A	
D102	8-719-016-42	DIODE MC932		Q210	8-729-600-19	TRANSISTOR 2SK381-A	
D103	8-719-109-74	DIODE RD4.3ESB1		Q213	8-729-600-19	TRANSISTOR 2SK381-A	
				Q214	8-729-200-17	TRANSISTOR 2SA1091-0	
D104	8-719-911-19	DIODE 1SS119		Q301	8-729-384-48	TRANSISTOR 2SA844-E	
D105	8-719-109-93	DIODE RD6.2ESB2		Q302	8-729-384-48	TRANSISTOR 2SA844-E	
D201	8-719-911-19	DIODE 1SS119		Q303	8-729-384-48	TRANSISTOR 2SA844-E	
D202	8-719-016-42	DIODE MC932		Q305	8-729-600-19	TRANSISTOR 2SK381-A	
D203	8-719-109-74	DIODE RD4.3ESB1		Q306	8-729-384-48	TRANSISTOR 2SA844-E	
				Q307	8-729-266-82	TRANSISTOR 2SC2668-0	
D204	8-719-911-19	DIODE 1SS119		Q308	8-729-384-48	TRANSISTOR 2SA844-E	
D205	8-719-109-93	DIODE RD6.2ESB2		Q309	8-729-600-19	TRANSISTOR 2SK381-A	
D301	8-719-911-19	DIODE 1SS119		Q310	8-729-600-19	TRANSISTOR 2SK381-A	
D302	8-719-016-42	DIODE MC932		Q313	8-729-600-19	TRANSISTOR 2SK381-A	
D303	8-719-109-74	DIODE RD4.3ESB1		Q314	8-729-200-17	TRANSISTOR 2SA1091-0	
D304	8-719-911-19	DIODE 1SS119					
D305	8-719-109-93	DIODE RD6.2ESB2					
<IC>				<RESISTOR>			
IC1	8-759-145-58	IC UPC4558C		R1	1-247-903-00	CARBON 1M 5% 1/4W	
IC101	8-759-140-53	IC UPD4053BC		R2	1-249-429-11	CARBON 10K 5% 1/4W	
IC102	8-766-001-49	TRANSISTOR TX-429M		R3	1-215-493-00	METAL 1M 1% 1/4W	
IC103	8-759-990-82	IC TL082CP		R4	1-215-469-00	METAL 100K 1% 1/4W	
IC104	8-759-990-82	IC TL082CP		R5	1-249-435-11	CARBON 33K 5% 1/4W	
				R8	1-249-441-11	CARBON 100K 5% 1/4W	
IC105	8-759-990-82	IC TL082CP		R9	1-249-424-11	CARBON 3.9K 5% 1/4W	
IC201	8-759-140-53	IC UPD4053BC		R10	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC202	8-766-001-49	TRANSISTOR TX-429M		R11	1-249-435-11	CARBON 33K 5% 1/4W	
IC203	8-759-990-82	IC TL082CP		R12	1-249-429-11	CARBON 10K 5% 1/4W	
IC204	8-759-990-82	IC TL082CP		R13	1-249-425-11	CARBON 4.7K 5% 1/4W	
				R14	1-249-435-11	CARBON 33K 5% 1/4W	
IC205	8-759-990-82	IC TL082CP		R15	1-249-429-11	CARBON 10K 5% 1/4W	
IC301	8-759-140-53	IC UPD4053BC		R23	1-249-417-11	CARBON 1K 5% 1/4W	
IC302	8-766-001-49	TRANSISTOR TX-429M		R24	1-249-417-11	CARBON 1K 5% 1/4W	
IC303	8-759-990-82	IC TL082CP		R25	1-249-417-11	CARBON 1K 5% 1/4W	
IC304	8-759-990-82	IC TL082CP		R31	1-249-430-11	CARBON 12K 5% 1/4W	
IC305	8-759-990-82	IC TL082CP		R32	1-249-436-11	CARBON 39K 5% 1/4W	
				R33	1-249-430-11	CARBON 12K 5% 1/4W	
<TRANSISTOR>				R51	1-249-417-11	CARBON 1K 5% 1/4W	
Q1	8-729-900-74	TRANSISTOR DTC143TS		R52	1-249-417-11	CARBON 1K 5% 1/4W	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R53	1-249-417-11	CARBON 1K 5% 1/4W	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R54	1-249-431-11	CARBON 15K 5% 1/4W	
Q11	8-729-201-05	TRANSISTOR 2SC2878-B		R55	1-249-437-11	CARBON 47K 5% 1/4W	
Q12	8-729-201-05	TRANSISTOR 2SC2878-B		R56	1-249-431-11	CARBON 15K 5% 1/4W	
				R57	1-249-431-11	CARBON 15K 5% 1/4W	
Q13	8-729-201-05	TRANSISTOR 2SC2878-B		R58	1-249-439-11	CARBON 68K 5% 1/4W	
Q14	8-729-201-05	TRANSISTOR 2SC2878-B		R60	1-215-465-00	METAL 68K 1% 1/4W	
Q15	8-729-900-65	TRANSISTOR DTA144ES		R61	1-215-445-00	METAL 10K 1% 1/4W	
Q101	8-729-384-48	TRANSISTOR 2SA844-E		R101	1-249-441-11	CARBON 100K 5% 1/4W	
Q102	8-729-384-48	TRANSISTOR 2SA844-E		R102	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R104	1-215-469-00	METAL 100K 1% 1/4W	
Q103	8-729-384-48	TRANSISTOR 2SA844-E		R105	1-215-477-00	METAL 220K 1% 1/4W	
Q105	8-729-600-19	TRANSISTOR 2SK381-A		R106	1-215-427-00	METAL 1.8K 1% 1/4W	
Q106	8-729-384-48	TRANSISTOR 2SA844-E		R107	1-249-435-11	CARBON 33K 5% 1/4W	
Q107	8-729-266-82	TRANSISTOR 2SC2668-0		R108	1-249-430-11	CARBON 12K 5% 1/4W	
Q108	8-729-384-48	TRANSISTOR 2SA844-E		R109	1-249-417-11	CARBON 1K 5% 1/4W	
Q109	8-729-600-19	TRANSISTOR 2SK381-A					
Q110	8-729-600-19	TRANSISTOR 2SK381-A					
Q113	8-729-600-19	TRANSISTOR 2SK381-A					

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R110	1-249-441-11	CARBON	100K 5% 1/4W	R301	1-249-441-11	CARBON	100K 5% 1/4W
R111	1-249-417-11	CARBON	1K 5% 1/4W	R302	1-249-421-11	CARBON	2.2K 5% 1/4W
R112	1-249-417-11	CARBON	1K 5% 1/4W	R304	1-215-469-00	METAL	100K 1% 1/4W
R113	1-247-903-00	CARBON	1M 5% 1/4W	R305	1-215-477-00	METAL	220K 1% 1/4W
R114	1-249-419-11	CARBON	1.5K 5% 1/4W	R306	1-215-427-00	METAL	1.8K 1% 1/4W
R115	1-249-419-11	CARBON	1.5K 5% 1/4W	R307	1-249-435-11	CARBON	33K 5% 1/4W
R116	1-249-424-11	CARBON	3.9K 5% 1/4W	R308	1-249-430-11	CARBON	12K 5% 1/4W
R117	1-249-419-11	CARBON	1.5K 5% 1/4W	R309	1-249-417-11	CARBON	1K 5% 1/4W
R118	1-215-421-00	METAL	1K 1% 1/4W	R310	1-249-441-11	CARBON	100K 5% 1/4W
R119	1-249-405-11	CARBON	100 5% 1/4W	R311	1-249-417-11	CARBON	1K 5% 1/4W
R120	1-249-405-11	CARBON	100 5% 1/4W	R312	1-249-417-11	CARBON	1K 5% 1/4W
R121	1-249-409-11	CARBON	220 5% 1/4W	R313	1-247-903-00	CARBON	1M 5% 1/4W
R122	1-215-427-00	METAL	1.8K 1% 1/4W	R314	1-249-419-11	CARBON	1.5K 5% 1/4W
R123	1-249-429-11	CARBON	10K 5% 1/4W	R315	1-249-419-11	CARBON	1.5K 5% 1/4W
R124	1-249-429-11	CARBON	10K 5% 1/4W	R316	1-249-424-11	CARBON	3.9K 5% 1/4W
R125	1-249-422-11	CARBON	2.7K 5% 1/4W	R317	1-249-419-11	CARBON	1.5K 5% 1/4W
R127	1-215-453-00	METAL	22K 1% 1/4W	R318	1-215-421-00	METAL	1K 1% 1/4W
R128	1-215-445-00	METAL	10K 1% 1/4W	R319	1-249-405-11	CARBON	100 5% 1/4W
R136	1-215-477-00	METAL	220K 1% 1/4W	R320	1-249-405-11	CARBON	100 5% 1/4W
R137	1-249-417-11	CARBON	1K 5% 1/4W	R321	1-249-409-11	CARBON	220 5% 1/4W
R138	1-249-441-11	CARBON	100K 5% 1/4W	R322	1-215-427-00	METAL	1.8K 1% 1/4W
R140	1-249-429-11	CARBON	10K 5% 1/4W	R323	1-249-429-11	CARBON	10K 5% 1/4W
R141	1-215-469-00	METAL	100K 1% 1/4W	R324	1-249-429-11	CARBON	10K 5% 1/4W
R142	1-215-455-00	METAL	27K 1% 1/4W	R325	1-249-422-11	CARBON	2.7K 5% 1/4W
R143	1-215-488-00	METAL	620K 1% 1/4W	R327	1-215-453-00	METAL	22K 1% 1/4W
R144	1-249-434-11	CARBON	27K 5% 1/4W	R328	1-215-445-00	METAL	10K 1% 1/4W
R146	1-249-417-11	CARBON	1K 5% 1/4W	R336	1-215-477-00	METAL	220K 1% 1/4W
R147	1-249-405-11	CARBON	100 5% 1/4W	R337	1-249-417-11	CARBON	1K 5% 1/4W
R201	1-249-441-11	CARBON	100K 5% 1/4W	R338	1-249-441-11	CARBON	100K 5% 1/4W
R202	1-249-421-11	CARBON	2.2K 5% 1/4W	R340	1-249-429-11	CARBON	10K 5% 1/4W
R204	1-215-469-00	METAL	100K 1% 1/4W	R341	1-215-469-00	METAL	100K 1% 1/4W
R205	1-215-477-00	METAL	220K 1% 1/4W	R342	1-215-455-00	METAL	27K 1% 1/4W
R206	1-215-427-00	METAL	1.8K 1% 1/4W	R343	1-215-488-00	METAL	620K 1% 1/4W
R207	1-249-435-11	CARBON	33K 5% 1/4W	R344	1-249-434-11	CARBON	27K 5% 1/4W
R208	1-249-430-11	CARBON	12K 5% 1/4W	R346	1-249-417-11	CARBON	1K 5% 1/4W
R209	1-249-417-11	CARBON	1K 5% 1/4W	R347	1-249-405-11	CARBON	100 5% 1/4W
R210	1-249-441-11	CARBON	100K 5% 1/4W	*****			
R211	1-249-417-11	CARBON	1K 5% 1/4W	*A-1135-361-A BJ BOARD, COMPLETE			
R212	1-249-417-11	CARBON	1K 5% 1/4W	*****			
R213	1-247-903-00	CARBON	1M 5% 1/4W	*4-353-708-00 HOOK, FINGER			
R214	1-249-419-11	CARBON	1.5K 5% 1/4W	<CAPACITOR>			
R215	1-249-419-11	CARBON	1.5K 5% 1/4W	C1	1-101-361-00	CERAMIC	150PF 5% 50V
R216	1-249-424-11	CARBON	3.9K 5% 1/4W	C2	1-101-361-00	CERAMIC	150PF 5% 50V
R217	1-249-419-11	CARBON	1.5K 5% 1/4W	C4	1-102-821-00	CERAMIC	360PF 5% 50V
R218	1-215-421-00	METAL	1K 1% 1/4W	C5	1-130-473-00	MYLAR	0.0015MF 5% 50V
R219	1-249-405-11	CARBON	100 5% 1/4W	C11	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V
R220	1-249-405-11	CARBON	100 5% 1/4W	C12	1-102-525-11	CERAMIC	68PF 5% 50V
R221	1-249-409-11	CARBON	220 5% 1/4W	C14	1-102-525-11	CERAMIC	68PF 5% 50V
R222	1-215-427-00	METAL	1.8K 1% 1/4W	C15	1-102-525-11	CERAMIC	68PF 5% 50V
R223	1-249-429-11	CARBON	10K 5% 1/4W	C16	1-102-525-11	CERAMIC	68PF 5% 50V
R224	1-249-429-11	CARBON	10K 5% 1/4W	C17	1-102-525-11	CERAMIC	68PF 5% 50V
R225	1-249-422-11	CARBON	2.7K 5% 1/4W	C18	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V
R227	1-215-453-00	METAL	22K 1% 1/4W	C19	1-102-973-00	CERAMIC	100PF 5% 50V
R228	1-215-445-00	METAL	10K 1% 1/4W	C20	1-102-525-11	CERAMIC	68PF 5% 50V
R236	1-215-477-00	METAL	220K 1% 1/4W	C21	1-101-361-00	CERAMIC	150PF 5% 50V
R237	1-249-417-11	CARBON	1K 5% 1/4W	C22	1-101-890-00	CERAMIC	75PF 5% 50V
R238	1-249-441-11	CARBON	100K 5% 1/4W	C23	1-102-965-00	CERAMIC	39PF 5% 50V
R240	1-249-429-11	CARBON	10K 5% 1/4W	C25	1-102-946-00	CERAMIC	9PF 1PF 50V
R241	1-215-469-00	METAL	100K 1% 1/4W	C26	1-102-944-00	CERAMIC	7PF 1PF 50V
R242	1-215-455-00	METAL	27K 1% 1/4W	C27	1-101-361-00	CERAMIC	150PF 5% 50V
R243	1-215-488-00	METAL	620K 1% 1/4W				
R244	1-249-434-11	CARBON	27K 5% 1/4W				
R246	1-249-417-11	CARBON	1K 5% 1/4W				
R247	1-249-405-11	CARBON	100 5% 1/4W				

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C28	1-130-471-00	MYLAR	0.001MF 5%	50V	IC6	8-759-000-35	IC MC14027BCP
C29	1-130-471-00	MYLAR	0.001MF 5%	50V	IC7	8-759-000-35	IC MC14027BCP
C30	1-101-004-00	CERAMIC	0.01MF	50V	IC8	8-759-000-35	IC MC14027BCP
C31	1-101-361-00	CERAMIC	150PF	5%	IC9	8-759-000-35	IC MC14027BCP
C32	1-101-361-00	CERAMIC	150PF	5%	IC10	8-759-345-38	IC HD14538BP
C33	1-101-361-00	CERAMIC	150PF	5%	IC11	8-759-345-38	IC HD14538BP
C34	1-101-361-00	CERAMIC	150PF	5%	IC12	8-759-345-38	IC HD14538BP
C35	1-130-471-00	MYLAR	0.001MF	5%	IC13	8-759-040-01	IC MC14001BCP
C36	1-102-824-00	CERAMIC	470PF	5%	IC14	8-759-040-01	IC MC14001BCP
C37	1-124-903-11	ELECT	1MF	20%	IC15	8-759-240-71	IC TC4071BP
C38	1-101-004-00	CERAMIC	0.01MF	50V	IC16	8-759-040-11	IC MC14011BCP
C39	1-101-004-00	CERAMIC	0.01MF	50V	IC17	8-759-040-11	IC MC14011BCP
C40	1-102-074-00	CERAMIC	0.001MF	10%	IC18	8-759-000-32	IC MC14023BCP
C61	1-101-888-00	CERAMIC	68PF	5%	IC19	8-759-240-81	IC TC4081BP
C62	1-101-880-00	CERAMIC	47PF	5%	IC20	8-759-240-81	IC TC4081BP
C63	1-101-888-00	CERAMIC	68PF	5%	IC21	8-759-240-71	IC TC4071BP
C64	1-101-880-00	CERAMIC	47PF	5%	IC22	8-759-240-71	IC TC4071BP
C65	1-102-820-00	CERAMIC	330PF	5%	IC23	8-759-040-73	IC MC14073BCP
C66	1-101-004-00	CERAMIC	0.01MF	50V	IC24	8-759-000-51	IC MC14069UBCP
C67	1-101-880-00	CERAMIC	47PF	5%	IC25	8-759-000-51	IC MC14069UBCP
C100	1-124-910-11	ELECT	47MF	20%	IC26	8-759-041-75	IC MC14175BCP
C102	1-124-034-51	ELECT	33MF	20%	IC27	8-759-140-53	IC UPD4053BC
C106	1-101-004-00	CERAMIC	0.01MF	50V	IC28	8-759-000-77	IC MC14520BCP
C108	1-124-034-51	ELECT	33MF	20%	IC29	8-759-345-38	IC HD14538BP
C109	1-101-004-00	CERAMIC	0.01MF	50V			
C110	1-101-004-00	CERAMIC	0.01MF	50V		<COIL>	
C111	1-101-004-00	CERAMIC	0.01MF	50V	L1	1-408-098-00	INDUCTOR 560UH
C112	1-101-004-00	CERAMIC	0.01MF	50V	L2	1-408-098-00	INDUCTOR 560UH
C113	1-101-004-00	CERAMIC	0.01MF	50V	L3	9-910-999-31	INDUCTOR 680UH
C114	1-126-966-11	ELECT	10MF	20%			
C115	1-101-004-00	CERAMIC	0.01MF	50V		<TRANSISTOR>	
C116	1-101-004-00	CERAMIC	0.01MF	50V	Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE
C117	1-101-004-00	CERAMIC	0.01MF	50V	Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE
C118	1-126-966-11	ELECT	10MF	20%	Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE
C120	1-101-004-00	CERAMIC	0.01MF	50V	Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE
C121	1-101-004-00	CERAMIC	0.01MF	50V	Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE
C122	1-101-004-00	CERAMIC	0.01MF	50V	Q19	8-729-119-76	TRANSISTOR 2SA1175-HFE
C130	1-124-034-51	ELECT	33MF	20%	Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE
		<COMPOSITION CIRCUIT BLOCK>			Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE
CP1	1-232-738-11	COMPOSITION CIRCUIT BLOCK			Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE
CP2	1-232-738-11	COMPOSITION CIRCUIT BLOCK			Q23	8-729-119-76	TRANSISTOR 2SA1175-HFE
CP3	1-232-738-11	COMPOSITION CIRCUIT BLOCK			Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE
CP4	1-232-738-11	COMPOSITION CIRCUIT BLOCK			Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE
CP5	1-232-738-11	COMPOSITION CIRCUIT BLOCK			Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE
		<DIODE>				<RESISTOR>	
D1	8-719-911-19	DIODE 1SS119			R2	1-215-439-00	METAL 5.6K 1% 1/4W
D2	8-719-911-19	DIODE 1SS119			R3	1-249-422-11	CARBON 2.7K 5% 1/4W
D3	8-719-911-19	DIODE 1SS119			R4	1-215-449-00	METAL 15K 1% 1/4W
D7	8-719-911-19	DIODE 1SS119			R5	1-249-441-11	CARBON 100K 5% 1/4W
D8	8-719-911-19	DIODE 1SS119			R6	1-249-425-11	CARBON 4.7K 5% 1/4W
D9	8-719-911-19	DIODE 1SS119			R7	1-215-439-00	METAL 5.6K 1% 1/4W
D11	8-719-016-42	DIODE MC932			R37	1-249-441-11	CARBON 100K 5% 1/4W
		<IC>			R38	1-215-454-00	METAL 24K 1% 1/4W
IC1	8-759-345-38	IC HD14538BP			R39	1-249-422-11	CARBON 2.7K 5% 1/4W
IC2	8-759-040-01	IC MC14001BCP			R42	1-249-433-11	CARBON 22K 5% 1/4W
IC3	8-759-240-40	IC TC4040BP			R43	1-247-876-11	CARBON 75K 5% 1/4W
IC4	8-759-240-40	IC TC4040BP			R44	1-249-429-11	CARBON 10K 5% 1/4W
IC5	8-759-000-35	IC MC14027BCP			R45	1-249-441-11	CARBON 100K 5% 1/4W
					R46	1-249-441-11	CARBON 100K 5% 1/4W
					R47	1-247-862-11	CARBON 20K 5% 1/4W

IIIIIIII 7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R48	1-215-467-00	METAL	82K 1% 1/4W				
R49	1-249-422-11	CARBON	2.7K 5% 1/4W				
R50	1-215-469-00	METAL	100K 1% 1/4W				
R51	1-215-445-00	METAL	10K 1% 1/4W				
R52	1-247-885-00	CARBON	180K 5% 1/4W				
R53	1-215-449-00	METAL	15K 1% 1/4W				
R54	1-249-422-11	CARBON	2.7K 5% 1/4W				
R56	1-249-434-11	CARBON	27K 5% 1/4W				
R57	1-249-422-11	CARBON	2.7K 5% 1/4W				
R58	1-249-425-11	CARBON	4.7K 5% 1/4W				
R59	1-247-836-11	CARBON	1.6K 5% 1/4W				
R60	1-249-427-11	CARBON	6.8K 5% 1/4W				
R61	1-215-449-00	METAL	15K 1% 1/4W				
R62	1-249-433-11	CARBON	22K 5% 1/4W				
R63	1-249-425-11	CARBON	4.7K 5% 1/4W				
R64	1-249-425-11	CARBON	4.7K 5% 1/4W				
R65	1-249-417-11	CARBON	1K 5% 1/4W				
R66	1-249-430-11	CARBON	12K 5% 1/4W				
R67	1-249-425-11	CARBON	4.7K 5% 1/4W				
R68	1-249-433-11	CARBON	22K 5% 1/4W				
R69	1-249-425-11	CARBON	4.7K 5% 1/4W				
R70	1-249-417-11	CARBON	1K 5% 1/4W				
R71	1-249-430-11	CARBON	12K 5% 1/4W				
R72	1-249-433-11	CARBON	22K 5% 1/4W				
R74	1-249-430-11	CARBON	12K 5% 1/4W				
R75	1-249-422-11	CARBON	2.7K 5% 1/4W				
R76	1-215-463-00	METAL	56K 1% 1/4W				
R77	1-215-475-00	METAL	180K 1% 1/4W				
R78	1-215-439-00	METAL	5.6K 1% 1/4W				
R79	1-249-425-11	CARBON	4.7K 5% 1/4W				
R80	1-249-433-11	CARBON	22K 5% 1/4W				
R81	1-249-425-11	CARBON	4.7K 5% 1/4W				
R82	1-249-415-11	CARBON	680 5% 1/4W				
R83	1-249-417-11	CARBON	1K 5% 1/4W				
R85	1-249-430-11	CARBON	12K 5% 1/4W				
R87	1-249-422-11	CARBON	2.7K 5% 1/4W				
R89	1-247-887-00	CARBON	220K 5% 1/4W				
R90	1-249-441-11	CARBON	100K 5% 1/4W				
R91	1-249-441-11	CARBON	100K 5% 1/4W				
R92	1-249-441-11	CARBON	100K 5% 1/4W				
R93	1-249-429-11	CARBON	10K 5% 1/4W				
R94	1-249-429-11	CARBON	10K 5% 1/4W				
R95	1-249-441-11	CARBON	100K 5% 1/4W				
R96	1-249-417-11	CARBON	1K 5% 1/4W				
R100	1-249-423-11	CARBON	3.3K 5% 1/4W				
R111	1-249-427-11	CARBON	6.8K 5% 1/4W				
R112	1-249-429-11	CARBON	10K 5% 1/4W				
R113	1-249-429-11	CARBON	10K 5% 1/4W				
R114	1-249-422-11	CARBON	2.7K 5% 1/4W				
R115	1-249-419-11	CARBON	1.5K 5% 1/4W				
R116	1-249-427-11	CARBON	6.8K 5% 1/4W				
R117	1-249-429-11	CARBON	10K 5% 1/4W				
R118	1-249-429-11	CARBON	10K 5% 1/4W				
R119	1-249-422-11	CARBON	2.7K 5% 1/4W				
R120	1-249-419-11	CARBON	1.5K 5% 1/4W				
R121	1-249-417-11	CARBON	1K 5% 1/4W				
R122	1-249-417-11	CARBON	1K 5% 1/4W				
R123	1-249-413-11	CARBON	470 5% 1/4W				
R124	1-249-417-11	CARBON	1K 5% 1/4W				
R125	1-249-417-11	CARBON	1K 5% 1/4W				
R126	1-249-417-11	CARBON	1K 5% 1/4W				
R127	1-249-417-11	CARBON	1K 5% 1/4W				
R128	1-249-417-11	CARBON	1K 5% 1/4W				
R129	1-249-417-11	CARBON	1K 5% 1/4W				

BK

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C84	1-123-939-00	ELECT	10MF 20% 200V	<DIODE>			
C85	1-123-939-00	ELECT	10MF 20% 200V	D1	8-719-911-19	DIODE 1SS119	
C86	1-123-939-00	ELECT	10MF 20% 200V	D2	8-719-911-19	DIODE 1SS119	
C87	1-123-939-00	ELECT	10MF 20% 200V	D101	8-719-911-19	DIODE 1SS119	
C88	1-123-939-00	ELECT	10MF 20% 200V	D102	8-719-911-19	DIODE 1SS119	
C91	1-102-050-00	CERAMIC	0.01MF 99% 500V	D103	8-719-911-19	DIODE 1SS119	
C92	1-102-050-00	CERAMIC	0.01MF 99% 500V	D104	8-719-911-19	DIODE 1SS119	
C93	1-102-050-00	CERAMIC	0.01MF 99% 500V	D105	8-719-911-19	DIODE 1SS119	
C100	1-136-165-00	FILM	0.1MF 5% 50V	D106	8-719-911-19	DIODE 1SS119	
C102	1-124-046-00	ELECT	10MF 20% 160V	D107	8-719-911-19	DIODE 1SS119	
C103	1-102-976-00	CERAMIC	180PF 5% 50V	D108	8-719-911-19	DIODE 1SS119	
C104	1-136-110-00	FILM	0.91MF 5% 200V	D109	8-719-901-83	DIODE 1SS83	
C105	1-124-034-51	ELECT	33MF 20% 16V	D110	8-719-300-80	DIODE RU-1C	
C106	1-124-910-11	ELECT	47MF 20% 25V	D111	8-719-300-80	DIODE RU-1C	
C107	1-101-004-00	CERAMIC	0.01MF 50V	D112	8-719-911-19	DIODE 1SS119	
C108	1-106-371-00	MYLAR	0.015MF 10% 200V	D113	8-719-911-19	DIODE 1SS119	
C109	1-124-046-00	ELECT	10MF 20% 160V	D114	8-719-911-19	DIODE 1SS119	
C110	1-102-973-00	CERAMIC	100PF 5% 50V	D115	8-719-911-19	DIODE 1SS119	
C111	1-102-965-00	CERAMIC	39PF 5% 50V	D116	8-719-911-19	DIODE 1SS119	
C112	1-102-942-00	CERAMIC	5PF 1PF 50V	D201	8-719-911-19	DIODE 1SS119	
C114	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D202	8-719-911-19	DIODE 1SS119	
C115	1-101-880-00	CERAMIC	47PF 5% 50V	D203	8-719-911-19	DIODE 1SS119	
C133	1-102-942-00	CERAMIC	5PF 1PF 50V	D204	8-719-911-19	DIODE 1SS119	
C200	1-136-165-00	FILM	0.1MF 5% 50V	D205	8-719-911-19	DIODE 1SS119	
C202	1-124-046-00	ELECT	10MF 20% 160V	D206	8-719-911-19	DIODE 1SS119	
C203	1-102-976-00	CERAMIC	180PF 5% 50V	D207	8-719-911-19	DIODE 1SS119	
C204	1-136-110-00	FILM	0.91MF 5% 200V	D208	8-719-911-19	DIODE 1SS119	
C205	1-124-034-51	ELECT	33MF 20% 16V	D209	8-719-901-83	DIODE 1SS83	
C206	1-124-910-11	ELECT	47MF 20% 25V	D210	8-719-300-80	DIODE RU-1C	
C207	1-101-004-00	CERAMIC	0.01MF 50V	D211	8-719-300-80	DIODE RU-1C	
C208	1-106-371-00	MYLAR	0.015MF 10% 200V	D212	8-719-911-19	DIODE 1SS119	
C209	1-124-046-00	ELECT	10MF 20% 160V	D213	8-719-911-19	DIODE 1SS119	
C210	1-102-973-00	CERAMIC	100PF 5% 50V	D214	8-719-911-19	DIODE 1SS119	
C211	1-102-965-00	CERAMIC	39PF 5% 50V	D215	8-719-911-19	DIODE 1SS119	
C212	1-102-942-00	CERAMIC	5PF 1PF 50V	D216	8-719-911-19	DIODE 1SS119	
C214	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D301	8-719-911-19	DIODE 1SS119	
C215	1-101-880-00	CERAMIC	47PF 5% 50V	D302	8-719-911-19	DIODE 1SS119	
C233	1-102-942-00	CERAMIC	5PF 1PF 50V	D303	8-719-911-19	DIODE 1SS119	
C300	1-136-165-00	FILM	0.1MF 5% 50V	D304	8-719-911-19	DIODE 1SS119	
C302	1-124-046-00	ELECT	10MF 20% 160V	D305	8-719-911-19	DIODE 1SS119	
C303	1-102-976-00	CERAMIC	180PF 5% 50V	D306	8-719-911-19	DIODE 1SS119	
C304	1-136-110-00	FILM	0.91MF 5% 200V	D307	8-719-911-19	DIODE 1SS119	
C305	1-124-034-51	ELECT	33MF 20% 16V	D308	8-719-911-19	DIODE 1SS119	
C306	1-124-910-11	ELECT	47MF 20% 25V	D309	8-719-901-83	DIODE 1SS83	
C307	1-101-004-00	CERAMIC	0.01MF 50V	D310	8-719-300-80	DIODE RU-1C	
C308	1-106-371-00	MYLAR	0.015MF 10% 200V	D311	8-719-300-80	DIODE RU-1C	
C309	1-124-046-00	ELECT	10MF 20% 160V	D312	8-719-911-19	DIODE 1SS119	
C310	1-102-973-00	CERAMIC	100PF 5% 50V	D313	8-719-911-19	DIODE 1SS119	
C311	1-102-965-00	CERAMIC	39PF 5% 50V	D314	8-719-911-19	DIODE 1SS119	
C312	1-102-942-00	CERAMIC	5PF 1PF 50V	D315	8-719-911-19	DIODE 1SS119	
C314	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D316	8-719-911-19	DIODE 1SS119	
C315	1-101-880-00	CERAMIC	47PF 5% 50V	<IC>			
C333	1-102-942-00	CERAMIC	5PF 1PF 50V	IC1	8-759-145-58	IC UPC4558C	
<TRIMMER>				<TRANSISTOR>			
CV101	1-141-179-12	CAP, VAR, TRIMMER		Q1	8-729-384-48	TRANSISTOR 2SA844-E	
CV102	1-141-171-00	CAP, TRIMMER 15P		Q12	8-729-200-17	TRANSISTOR 2SA1091-0	
CV201	1-141-179-12	CAP, VAR, TRIMMER		Q13	8-729-200-17	TRANSISTOR 2SA1091-0	
CV202	1-141-171-00	CAP, TRIMMER 15P		Q101	8-729-266-82	TRANSISTOR 2SC2668-0	
CV301	1-141-179-12	CAP, VAR, TRIMMER		Q102	8-729-384-48	TRANSISTOR 2SA844-E	
CV302	1-141-171-00	CAP, TRIMMER 15P					

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE		R110	1-249-405-11	CARBON 100 5%	1/4W
Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE		R111	1-249-405-11	CARBON 100 5%	1/4W
Q105	8-729-384-48	TRANSISTOR 2SA844-E		R112	1-215-391-00	METAL 56 1%	1/4W
Q106	8-729-804-63	TRANSISTOR 2SA1406-E		R113	1-215-391-00	METAL 56 1%	1/4W
Q107	8-729-804-58	TRANSISTOR 2SC3600-E		R114	1-215-437-00	METAL 4.7K 1%	1/4W
Q108	8-729-804-58	TRANSISTOR 2SC3600-E		R115	1-214-765-00	METAL 33K 1%	1/4W
Q109	8-729-804-63	TRANSISTOR 2SA1406-E		R116	1-214-765-00	METAL 33K 1%	1/4W
Q110	8-729-804-58	TRANSISTOR 2SC3600-E		R117	1-249-405-11	CARBON 100 5%	1/4W
Q111	8-729-804-63	TRANSISTOR 2SA1406-E		R118	1-214-781-00	METAL 150K 1%	1/4W
Q112	8-729-255-12	TRANSISTOR 2SC2551-0		R119	1-215-447-00	METAL 12K 1%	1/4W
Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE		R120	1-216-431-11	METAL OXIDE 560 5%	1W F
Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE		R121	1-249-405-11	CARBON 100 5%	1/4W
Q115	8-729-119-78	TRANSISTOR 2SC2785-HFE		R122	1-249-405-11	CARBON 100 5%	1/4W
Q201	8-729-266-82	TRANSISTOR 2SC2668-0		R123	1-215-405-00	METAL 220 1%	1/4W
Q202	8-729-384-48	TRANSISTOR 2SA844-E		R124	1-249-405-11	CARBON 100 5%	1/4W
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE		R125	1-249-405-11	CARBON 100 5%	1/4W
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE		R126	1-215-394-00	METAL 75 1%	1/4W
Q205	8-729-384-48	TRANSISTOR 2SA844-E		R127	1-215-394-00	METAL 75 1%	1/4W
Q206	8-729-804-63	TRANSISTOR 2SA1406-E		R128	1-214-779-00	METAL 120K 1%	1/4W
Q207	8-729-804-58	TRANSISTOR 2SC3600-E		R129	1-249-430-11	CARBON 12K 5%	1/4W
Q208	8-729-804-58	TRANSISTOR 2SC3600-E		R130	1-216-443-11	METAL OXIDE 56K 5%	1W F
Q209	8-729-804-63	TRANSISTOR 2SA1406-E		R131	1-249-433-11	CARBON 22K 5%	1/4W
Q210	8-729-804-58	TRANSISTOR 2SC3600-E		R132	1-249-422-11	CARBON 2.7K 5%	1/4W
Q211	8-729-804-63	TRANSISTOR 2SA1406-E		R133	1-249-435-11	CARBON 33K 5%	1/4W
Q212	8-729-255-12	TRANSISTOR 2SC2551-0		R134	1-249-433-11	CARBON 22K 5%	1/4W
Q213	8-729-119-78	TRANSISTOR 2SC2785-HFE		R135	1-249-426-11	CARBON 5.6K 5%	1/4W
Q214	8-729-119-78	TRANSISTOR 2SC2785-HFE		R136	1-249-423-11	CARBON 3.3K 5%	1/4W
Q215	8-729-119-78	TRANSISTOR 2SC2785-HFE		R137	1-247-903-00	CARBON 1M 5%	1/4W
Q301	8-729-266-82	TRANSISTOR 2SC2668-0		R138	1-249-426-11	CARBON 5.6K 5%	1/4W
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R139	1-215-441-00	METAL 6.8K 1%	1/4W
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE		R140	1-249-405-11	CARBON 100 5%	1/4W
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE		R141	1-249-413-11	CARBON 470 5%	1/4W
Q305	8-729-384-48	TRANSISTOR 2SA844-E		R142	1-249-390-11	CARBON 5.6 5%	1/4W
Q306	8-729-804-63	TRANSISTOR 2SA1406-E		R143	1-249-422-11	CARBON 2.7K 5%	1/4W
Q307	8-729-804-58	TRANSISTOR 2SC3600-E		R201	1-215-391-00	METAL 56 1%	1/4W
Q308	8-729-804-58	TRANSISTOR 2SC3600-E		R202	1-249-419-11	CARBON 1.5K 5%	1/4W
Q309	8-729-804-63	TRANSISTOR 2SA1406-E		R204	1-249-405-11	CARBON 100 5%	1/4W
Q310	8-729-804-58	TRANSISTOR 2SC3600-E		R205	1-249-424-11	CARBON 3.9K 5%	1/4W
Q311	8-729-804-63	TRANSISTOR 2SA1406-E		R206	1-249-422-11	CARBON 2.7K 5%	1/4W
Q312	8-729-255-12	TRANSISTOR 2SC2551-0		R207	1-249-405-11	CARBON 100 5%	1/4W
Q313	8-729-119-78	TRANSISTOR 2SC2785-HFE		R208	1-249-405-11	CARBON 100 5%	1/4W
Q314	8-729-119-78	TRANSISTOR 2SC2785-HFE		R209	1-249-421-11	CARBON 2.2K 5%	1/4W
Q315	8-729-119-78	TRANSISTOR 2SC2785-HFE		R210	1-249-405-11	CARBON 100 5%	1/4W
<RESISTOR>				R211	1-249-405-11	CARBON 100 5%	1/4W
R1	1-249-429-11	CARBON 10K 5%	1/4W	R212	1-215-391-00	METAL 56 1%	1/4W
R2	1-249-441-11	CARBON 100K 5%	1/4W	R213	1-215-391-00	METAL 56 1%	1/4W
R3	1-249-417-11	CARBON 1K 5%	1/4W	R214	1-215-437-00	METAL 4.7K 1%	1/4W
R10	1-215-878-00	METAL OXIDE 33K 5%	1W F	R215	1-214-765-00	METAL 33K 1%	1/4W
R11	1-249-439-11	CARBON 68K 5%	1/4W	R216	1-214-765-00	METAL 33K 1%	1/4W
R12	1-249-417-11	CARBON 1K 5%	1/4W	R217	1-249-405-11	CARBON 100 5%	1/4W
R13	1-249-429-11	CARBON 10K 5%	1/4W	R218	1-214-781-00	METAL 150K 1%	1/4W
R14	1-215-469-00	METAL 100K 1%	1/4W	R219	1-215-447-00	METAL 12K 1%	1/4W
R15	1-215-461-00	METAL 47K 1%	1/4W	R220	1-216-431-11	METAL OXIDE 560 5%	1W F
R16	1-215-447-00	METAL 12K 1%	1/4W	R221	1-249-405-11	CARBON 100 5%	1/4W
R101	1-215-391-00	METAL 56 1%	1/4W	R222	1-249-405-11	CARBON 100 5%	1/4W
R102	1-249-419-11	CARBON 1.5K 5%	1/4W	R223	1-215-405-00	METAL 220 1%	1/4W
R104	1-249-405-11	CARBON 100 5%	1/4W	R224	1-249-405-11	CARBON 100 5%	1/4W
R105	1-249-424-11	CARBON 3.9K 5%	1/4W	R225	1-249-405-11	CARBON 100 5%	1/4W
R106	1-249-422-11	CARBON 2.7K 5%	1/4W	R226	1-215-394-00	METAL 75 1%	1/4W
R107	1-249-405-11	CARBON 100 5%	1/4W	R227	1-215-394-00	METAL 75 1%	1/4W
R108	1-249-405-11	CARBON 100 5%	1/4W	R228	1-214-779-00	METAL 120K 1%	1/4W
R109	1-249-421-11	CARBON 2.2K 5%	1/4W	R229	1-249-430-11	CARBON 12K 5%	1/4W
				R230	1-216-443-11	METAL OXIDE 56K 5%	1W F

BK

BD

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R231	1-249-433-11	CARBON	22K 5% 1/4W	C1	1-102-947-00	CERAMIC	10PF 0.5PF 50V
R232	1-249-422-11	CARBON	2.7K 5% 1/4W	C2	1-102-947-00	CERAMIC	10PF 0.5PF 50V
R233	1-249-435-11	CARBON	33K 5% 1/4W	C3	1-102-963-00	CERAMIC	33PF 5% 50V
R234	1-249-433-11	CARBON	22K 5% 1/4W	C4	1-101-880-00	CERAMIC	47PF 5% 50V
R235	1-249-426-11	CARBON	5.6K 5% 1/4W	C6	1-101-888-00	CERAMIC	68PF 5% 50V
R236	1-249-423-11	CARBON	3.3K 5% 1/4W	C7	1-102-963-00	CERAMIC	33PF 5% 50V
R237	1-247-903-00	CARBON	1M 5% 1/4W	C8	1-102-943-00	CERAMIC	6PF 0.5PF 50V
R238	1-249-426-11	CARBON	5.6K 5% 1/4W	C9	1-126-966-11	ELECT	10MF 20% 16V
R239	1-215-441-00	METAL	6.8K 1% 1/4W	C10	1-126-966-11	ELECT	10MF 20% 16V
R240	1-249-405-11	CARBON	100 5% 1/4W	C11	1-101-004-00	CERAMIC	0.01MF 50V
R241	1-249-413-11	CARBON	470 5% 1/4W	C12	1-101-004-00	CERAMIC	0.01MF 50V
R242	1-249-390-11	CARBON	5.6 5% 1/4W	C13	1-101-004-00	CERAMIC	0.01MF 50V
R243	1-249-422-11	CARBON	2.7K 5% 1/4W	C14	1-101-004-00	CERAMIC	0.01MF 50V
R301	1-215-391-00	METAL	56 1% 1/4W	C15	1-101-004-00	CERAMIC	0.01MF 50V
R302	1-249-419-11	CARBON	1.5K 5% 1/4W	C16	1-101-004-00	CERAMIC	0.01MF 50V
R304	1-249-405-11	CARBON	100 5% 1/4W	C17	1-136-165-00	FILM	0.1MF 5% 50V
R305	1-249-424-11	CARBON	3.9K 5% 1/4W	C18	1-102-950-00	CERAMIC	13PF 5% 50V
R306	1-249-422-11	CARBON	2.7K 5% 1/4W	C19	1-102-951-00	CERAMIC	15PF 5% 50V
R307	1-249-405-11	CARBON	100 5% 1/4W	C20	1-101-888-00	CERAMIC	68PF 5% 50V
R308	1-249-405-11	CARBON	100 5% 1/4W	C21	1-163-157-00	FILM	0.022MF 5% 50V
R309	1-249-421-11	CARBON	2.2K 5% 1/4W	C22	1-163-157-00	FILM	0.022MF 5% 50V
R310	1-249-405-11	CARBON	100 5% 1/4W	C23	1-124-903-11	ELECT	1MF 20% 50V
R311	1-249-405-11	CARBON	100 5% 1/4W	C24	1-101-004-00	CERAMIC	0.01MF 50V
R312	1-215-391-00	METAL	56 1% 1/4W	C25	1-124-910-11	ELECT	47MF 20% 16V
R313	1-215-391-00	METAL	56 1% 1/4W	C26	1-109-628-00	MICA	160PF 1% 500V
R314	1-215-437-00	METAL	4.7K 1% 1/4W	C27	1-102-960-00	CERAMIC	24PF 5% 50V
R315	1-214-765-00	METAL	33K 1% 1/4W	C28	1-109-631-00	MICA	330PF 1% 500V
R316	1-214-765-00	METAL	33K 1% 1/4W	C29	1-124-910-11	ELECT	47MF 20% 16V
R317	1-249-405-11	CARBON	100 5% 1/4W	C30	1-109-628-00	MICA	160PF 1% 500V
R318	1-214-781-00	METAL	150K 1% 1/4W	C31	1-102-960-00	CERAMIC	24PF 5% 50V
R319	1-215-447-00	METAL	12K 1% 1/4W	C32	1-109-631-00	MICA	330PF 1% 500V
R320	1-216-431-11	METAL OXIDE	560 5% 1W F	C33	1-101-004-00	CERAMIC	0.01MF 50V
R321	1-249-405-11	CARBON	100 5% 1/4W	C34	1-136-153-00	FILM	0.01MF 5% 50V
R322	1-249-405-11	CARBON	100 5% 1/4W	C35	1-101-004-00	CERAMIC	0.01MF 50V
R323	1-215-405-00	METAL	220 1% 1/4W	C36	1-124-902-00	ELECT	0.47MF 20% 50V
R324	1-249-405-11	CARBON	100 5% 1/4W	C37	1-101-004-00	CERAMIC	0.01MF 50V
R325	1-249-405-11	CARBON	100 5% 1/4W	C38	1-123-382-00	ELECT	3.3MF 20% 50V
R326	1-215-394-00	METAL	75 1% 1/4W	C39	1-109-667-11	MICA	56PF 1% 500V
R327	1-215-394-00	METAL	75 1% 1/4W	C40	1-102-942-00	CERAMIC	5PF 0.5PF 50V
R328	1-214-779-00	METAL	120K 1% 1/4W	C41	1-109-621-00	MICA	220PF 1% 500V
R329	1-249-430-11	CARBON	12K 5% 1/4W	C43	1-124-910-11	ELECT	47MF 20% 16V
R330	1-216-443-11	METAL OXIDE	56K 5% 1W F	C44	1-124-910-11	ELECT	47MF 20% 16V
R331	1-249-433-11	CARBON	22K 5% 1/4W	C45	1-101-004-00	CERAMIC	0.01MF 50V
R332	1-249-422-11	CARBON	2.7K 5% 1/4W	C46	1-136-153-00	FILM	0.01MF 5% 50V
R333	1-249-435-11	CARBON	33K 5% 1/4W	C49	1-124-902-00	ELECT	0.47MF 20% 50V
R334	1-249-433-11	CARBON	22K 5% 1/4W	C50	1-123-382-00	ELECT	3.3MF 20% 50V
R335	1-249-426-11	CARBON	5.6K 5% 1/4W	C51	1-109-667-11	MICA	56PF 1% 500V
R336	1-249-423-11	CARBON	3.3K 5% 1/4W	C52	1-102-942-00	CERAMIC	5PF 0.5PF 50V
R337	1-247-903-00	CARBON	1M 5% 1/4W	C53	1-109-621-00	MICA	220PF 1% 500V
R338	1-249-426-11	CARBON	5.6K 5% 1/4W	C55	1-124-910-11	ELECT	47MF 20% 16V
R339	1-215-441-00	METAL	6.8K 1% 1/4W	C56	1-124-910-11	ELECT	47MF 20% 16V
R340	1-249-405-11	CARBON	100 5% 1/4W	C57	1-101-004-00	CERAMIC	0.01MF 50V
R341	1-249-413-11	CARBON	470 5% 1/4W	C58	1-101-004-00	CERAMIC	0.01MF 50V
R342	1-249-390-11	CARBON	5.6 5% 1/4W	C59	1-101-004-00	CERAMIC	0.01MF 50V
R343	1-249-422-11	CARBON	2.7K 5% 1/4W	C60	1-124-910-11	ELECT	47MF 20% 16V
*****				C62	1-102-960-00	CERAMIC	24PF 5% 50V
*A-1135-391-A BD BOARD, COMPLETE (BVM-1411P ONLY)				C63	1-101-884-00	CERAMIC	56PF 5% 50V
*****				C64	1-101-884-00	CERAMIC	56PF 5% 50V
*4-353-708-00 HOOK, FINGER				C65	1-102-951-00	CERAMIC	15PF 5% 50V
<CAPACITOR>				C66	1-102-965-00	CERAMIC	39PF 5% 50V
				C67	1-102-935-00	CERAMIC	2PF 0.25PF 50V
				C68	1-124-034-51	ELECT	33MF 20% 16V
				C69	1-124-034-51	ELECT	33MF 20% 16V
				C70	1-123-369-00	ELECT	4.7MF 20% 50V

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C71	1-101-004-00	CERAMIC	0.01MF	50V			
C75	1-101-004-00	CERAMIC	0.01MF	50V			
C100	1-124-034-51	ELECT	33MF	20%	16V		
C101	1-124-910-11	ELECT	47MF	20%	25V		
C102	1-124-034-51	ELECT	33MF	20%	16V		
C103	1-124-034-51	ELECT	33MF	20%	16V		
C104	1-124-034-51	ELECT	33MF	20%	16V		
C106	1-124-034-51	ELECT	33MF	20%	16V		
C107	1-124-034-51	ELECT	33MF	20%	16V		
C108	1-124-034-51	ELECT	33MF	20%	16V		
C109	1-124-034-51	ELECT	33MF	20%	16V		
C110	1-124-034-51	ELECT	33MF	20%	16V		
C111	1-124-034-51	ELECT	33MF	20%	16V		
C112	1-124-119-00	ELECT	330MF	20%	16V		
C114	1-124-034-51	ELECT	33MF	20%	16V		
C115	1-124-034-51	ELECT	33MF	20%	16V		
C121	1-101-004-00	CERAMIC	0.01MF	50V			
C122	1-101-004-00	CERAMIC	0.01MF	50V			
C123	1-101-004-00	CERAMIC	0.01MF	50V			
C124	1-101-004-00	CERAMIC	0.01MF	50V			
C125	1-101-004-00	CERAMIC	0.01MF	50V			
C126	1-101-004-00	CERAMIC	0.01MF	50V			
C200	1-124-034-51	ELECT	33MF	20%	16V		
C201	1-124-910-11	ELECT	47MF	20%	25V		
C202	1-124-034-51	ELECT	33MF	20%	16V		
C203	1-124-034-51	ELECT	33MF	20%	16V		
C204	1-101-004-00	CERAMIC	0.01MF	50V			
C220	1-101-004-00	CERAMIC	0.01MF	50V			
C221	1-101-004-00	CERAMIC	0.01MF	50V			
C222	1-101-004-00	CERAMIC	0.01MF	50V			
C224	1-101-004-00	CERAMIC	0.01MF	50V			
C225	1-101-004-00	CERAMIC	0.01MF	50V			
C226	1-101-004-00	CERAMIC	0.01MF	50V			
C227	1-126-233-11	ELECT	22MF	20%	25V		
C250	1-124-034-51	ELECT	33MF	20%	16V		
C251	1-101-004-00	CERAMIC	0.01MF	50V			
C301	1-101-004-00	CERAMIC	0.01MF	50V			
C302	1-101-004-00	CERAMIC	0.01MF	50V			
C303	1-101-004-00	CERAMIC	0.01MF	50V			
C304	1-102-947-00	CERAMIC	10PF	0.5PF	50V		
C312	1-101-004-00	CERAMIC	0.01MF	50V			
C313	1-101-004-00	CERAMIC	0.01MF	50V			
C316	1-102-935-00	CERAMIC	2PF	0.25PF	50V		
C350	1-102-963-00	CERAMIC	33PF	5%	50V		
<TRIMMER>							
CV1	1-141-171-00	CAP. TRIMMER	15P				
CV2	1-141-179-12	CAP. VAR. TRIMMER					
<DIODE>							
D1	8-719-911-19	DIODE	1SS119				
D2	8-719-911-19	DIODE	1SS119				
D4	8-719-109-63	DIODE	RD3.0ESB2				
D5	8-719-110-13	DIODE	RD9.1ESB2				
D6	8-719-911-19	DIODE	1SS119				
D10	8-719-920-95	DIODE	1T25-0				
D11	8-719-911-19	DIODE	1SS119				
D12	8-719-110-31	DIODE	RD12ESB2				
D13	8-719-110-31	DIODE	RD12ESB2				
D16	8-719-911-19	DIODE	1SS119				
D201	8-719-911-19	DIODE	1SS119				
D202	8-719-911-19	DIODE	1SS119				
<IC>							
IC1	8-759-204-21	IC	TA7193P				
IC2	8-759-800-81	IC	LA7016				
IC3	8-759-246-15	IC	TL8608AP				
IC4	*1-526-654-00	SOCKET, IC (DP)	16P; IC3				
	8-759-246-15	IC	TL8608AP				
IC5	*1-526-654-00	SOCKET, IC (DP)	16P; IC4				
IC6	8-759-140-53	IC	UPD4053BC				
IC7	8-759-800-81	IC	LA7016				
IC8	8-759-145-58	IC	UPC4558C				
	8-759-145-58	IC	UPC4558C				
<COIL>							
L1	1-408-533-00	COIL, VARIABLE					
L2	1-408-532-00	COIL, VARIABLE					
L3	9-910-999-31	COIL (VARIABLE)					
L4	1-408-421-00	INDUCTOR	100UH				
L5	1-408-429-00	INDUCTOR	470UH				
L6	1-408-429-00	INDUCTOR	470UH				
L8	1-408-421-00	INDUCTOR	100UH				
L101	1-408-421-00	INDUCTOR	100UH				
L102	1-408-421-00	INDUCTOR	100UH				
<TRANSISTOR>							
Q1	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q2	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q3	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q4	8-729-800-10	TRANSISTOR	2SC3068				
Q5	8-729-800-10	TRANSISTOR	2SC3068				
Q6	8-729-384-48	TRANSISTOR	2SA844-E				
Q7	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q8	8-729-384-48	TRANSISTOR	2SA844-E				
Q9	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q10	8-729-119-76	TRANSISTOR	2SA1175-HFE				
Q11	8-729-119-76	TRANSISTOR	2SA1175-HFE				
Q12	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q13	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q14	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q15	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q16	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q17	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q18	8-729-600-19	TRANSISTOR	2SK381-A				
Q20	8-729-119-76	TRANSISTOR	2SA1175-HFE				
Q21	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q22	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q23	8-729-384-48	TRANSISTOR	2SA844-E				
Q24	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q25	8-729-800-10	TRANSISTOR	2SC3068				
Q26	8-729-600-19	TRANSISTOR	2SK381-A				
Q28	8-729-119-76	TRANSISTOR	2SA1175-HFE				
Q29	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q30	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q31	8-729-384-48	TRANSISTOR	2SA844-E				
Q32	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q33	8-729-800-10	TRANSISTOR	2SC3068				
Q34	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q35	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q36	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q38	8-729-119-78	TRANSISTOR	2SC2785-HFE				
Q101	8-729-140-97	TRANSISTOR	2SB734-34				

BD

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
Q102	8-729-320-62	TRANSISTOR 2SD789-34		R66	1-249-405-11	CARBON	100 5% 1/4W
Q103	8-729-900-63	TRANSISTOR DTA124ES		R70	1-247-903-00	CARBON	1M 5% 1/4W
Q104	8-729-900-63	TRANSISTOR DTA124ES					
<RESISTOR>				R71	1-249-429-11	CARBON	10K 5% 1/4W
R1	1-249-428-11	CARBON	8.2K 5% 1/4W	R72	1-249-429-11	CARBON	10K 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W	R73	1-249-429-11	CARBON	10K 5% 1/4W
R3	1-249-422-11	CARBON	2.7K 5% 1/4W	R74	1-249-417-11	CARBON	1K 5% 1/4W
R4	1-215-425-00	METAL	1.5K 1% 1/4W	R75	1-249-427-11	CARBON	6.8K 5% 1/4W
R5	1-215-395-00	METAL	82 1% 1/4W				
R6	1-215-421-00	METAL	1K 1% 1/4W	R76	1-249-427-11	CARBON	6.8K 5% 1/4W
R7	1-215-421-00	METAL	1K 1% 1/4W	R77	1-249-425-11	CARBON	4.7K 5% 1/4W
R8	1-215-423-00	METAL	1.2K 1% 1/4W	R78	1-215-424-00	METAL	1.3K 1% 1/4W
R9	1-215-421-00	METAL	1K 1% 1/4W	R79	1-215-419-00	METAL	820 1% 1/4W
R10	1-215-421-00	METAL	1K 1% 1/4W	R80	1-215-425-00	METAL	1.5K 1% 1/4W
R11	1-215-391-00	METAL	56 1% 1/4W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R12	1-215-427-00	METAL	1.8K 1% 1/4W	R82	1-249-425-11	CARBON	4.7K 5% 1/4W
R13	1-249-425-11	CARBON	4.7K 5% 1/4W	R83	1-249-435-11	CARBON	33K 5% 1/4W
R14	1-249-429-11	CARBON	10K 5% 1/4W	R84	1-249-435-11	CARBON	33K 5% 1/4W
R15	1-249-429-11	CARBON	10K 5% 1/4W	R85	1-247-903-00	CARBON	1M 5% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R86	1-249-429-11	CARBON	10K 5% 1/4W
R18	1-215-425-00	METAL	1.5K 1% 1/4W	R87	1-249-429-11	CARBON	10K 5% 1/4W
R19	1-215-425-00	METAL	1.5K 1% 1/4W	R88	1-249-429-11	CARBON	10K 5% 1/4W
R20	1-215-425-00	METAL	1.5K 1% 1/4W	R89	1-249-417-11	CARBON	1K 5% 1/4W
R21	1-215-425-00	METAL	1.5K 1% 1/4W	R90	1-249-427-11	CARBON	6.8K 5% 1/4W
R22	1-249-405-11	CARBON	100 5% 1/4W	R91	1-249-427-11	CARBON	6.8K 5% 1/4W
R23	1-215-441-00	METAL	6.8K 1% 1/4W	R92	1-249-425-11	CARBON	4.7K 5% 1/4W
R24	1-215-469-00	METAL	100K 1% 1/4W	R93	1-215-424-00	METAL	1.3K 1% 1/4W
R25	1-249-427-11	CARBON	6.8K 5% 1/4W	R94	1-215-419-00	METAL	820 1% 1/4W
R26	1-249-415-11	CARBON	680 5% 1/4W	R95	1-215-425-00	METAL	1.5K 1% 1/4W
R27	1-249-415-11	CARBON	680 5% 1/4W	R96	1-249-422-11	CARBON	2.7K 5% 1/4W
R28	1-249-420-11	CARBON	1.8K 5% 1/4W	R97	1-249-425-11	CARBON	4.7K 5% 1/4W
R29	1-249-422-11	CARBON	2.7K 5% 1/4W	R98	1-249-435-11	CARBON	33K 5% 1/4W
R30	1-249-405-11	CARBON	100 5% 1/4W	R99	1-249-435-11	CARBON	33K 5% 1/4W
R31	1-247-903-00	CARBON	1M 5% 1/4W	R100	1-215-438-00	METAL	5.1K 1% 1/4W
R32	1-249-429-11	CARBON	10K 5% 1/4W	R101	1-215-438-00	METAL	5.1K 1% 1/4W
R34	1-215-407-00	METAL	270 1% 1/4W	R102	1-215-438-00	METAL	5.1K 1% 1/4W
R35	1-215-407-00	METAL	270 1% 1/4W	R103	1-215-438-00	METAL	5.1K 1% 1/4W
R36	1-215-413-00	METAL	470 1% 1/4W	R104	1-249-437-11	CARBON	47K 5% 1/4W
R37	1-215-443-00	METAL	8.2K 1% 1/4W	R105	1-249-438-11	CARBON	56K 5% 1/4W
R38	1-249-441-11	CARBON	100K 5% 1/4W	R106	1-249-417-11	CARBON	1K 5% 1/4W
R39	1-215-425-00	METAL	1.5K 1% 1/4W	R107	1-249-417-11	CARBON	1K 5% 1/4W
R40	1-215-421-00	METAL	1K 1% 1/4W	R108	1-249-417-11	CARBON	1K 5% 1/4W
R41	1-215-429-00	METAL	2.2K 1% 1/4W	R109	1-249-417-11	CARBON	1K 5% 1/4W
R42	1-215-445-00	METAL	10K 1% 1/4W	R110	1-249-417-11	CARBON	1K 5% 1/4W
R43	1-215-421-00	METAL	1K 1% 1/4W	R115	1-215-438-00	METAL	5.1K 1% 1/4W
R44	1-249-433-11	CARBON	22K 5% 1/4W	R116	1-215-438-00	METAL	5.1K 1% 1/4W
R45	1-249-429-11	CARBON	10K 5% 1/4W	R120	1-249-429-11	CARBON	10K 5% 1/4W
R46	1-249-429-11	CARBON	10K 5% 1/4W	R121	1-249-429-11	CARBON	10K 5% 1/4W
R47	1-249-441-11	CARBON	100K 5% 1/4W	R130	1-215-477-00	METAL	220K 1% 1/4W
R48	1-249-425-11	CARBON	4.7K 5% 1/4W	R150	1-249-441-11	CARBON	100K 5% 1/4W
R54	1-249-422-11	CARBON	2.7K 5% 1/4W	R201	1-249-423-11	CARBON	3.3K 5% 1/4W
R55	1-215-418-00	METAL	750 1% 1/4W	R202	1-249-423-11	CARBON	3.3K 5% 1/4W
R56	1-215-420-00	METAL	910 1% 1/4W	R203	1-249-422-11	CARBON	2.7K 5% 1/4W
R57	1-249-415-11	CARBON	680 5% 1/4W	R204	1-249-423-11	CARBON	3.3K 5% 1/4W
R58	1-249-422-11	CARBON	2.7K 5% 1/4W	R220	1-249-441-11	CARBON	100K 5% 1/4W
R59	1-249-422-11	CARBON	2.7K 5% 1/4W	R221	1-249-433-11	CARBON	22K 5% 1/4W
R60	1-215-418-00	METAL	750 1% 1/4W	R222	1-249-433-11	CARBON	22K 5% 1/4W
R61	1-215-420-00	METAL	910 1% 1/4W	R250	1-215-415-00	METAL	560 1% 1/4W
R62	1-249-415-11	CARBON	680 5% 1/4W	R251	1-215-415-00	METAL	560 1% 1/4W
R63	1-249-422-11	CARBON	2.7K 5% 1/4W	R252	1-215-421-00	METAL	1K 1% 1/4W
R64	1-215-477-00	METAL	220K 1% 1/4W	R254	1-249-429-11	CARBON	10K 5% 1/4W
R65	1-215-435-00	METAL	3.9K 1% 1/4W	R255	1-249-441-11	CARBON	100K 5% 1/4W
				R259	1-215-421-00	METAL	1K 1% 1/4W
				R301	1-215-469-00	METAL	100K 1% 1/4W
				R302	1-215-491-00	METAL	820K 1% 1/4W

IIIIIIIIII 7. ELECTRICAL PARTS LIST

BD

BT

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R303	1-249-418-11	CARBON 1.2K 5%	1/4W	C43	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R305	1-249-431-11	CARBON 15K 5%	1/4W	C44	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
R306	1-249-428-11	CARBON 8.2K 5%	1/4W	C45	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R307	1-249-417-11	CARBON 1K 5%	1/4W	C47	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R308	1-249-417-11	CARBON 1K 5%	1/4W	C48	1-124-907-11	ELECT 10MF	20% 50V
R310	1-249-422-11	CARBON 2.7K 5%	1/4W	C49	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
R314	1-215-417-00	METAL 680 1%	1/4W	C50	1-124-907-11	ELECT 10MF	20% 50V
R315	1-249-422-11	CARBON 2.7K 5%	1/4W	C51	1-123-875-11	ELECT 10MF	20% 50V
R316	1-249-413-11	CARBON 470 5%	1/4W	C52	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R317	1-249-413-11	CARBON 470 5%	1/4W	C53	1-123-875-11	ELECT 10MF	20% 50V
R320	1-215-472-00	METAL 130K 1%	1/4W	C54	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R353	1-249-432-11	CARBON 18K 5%	1/4W	C55	1-123-875-11	ELECT 10MF	20% 50V
R354	1-249-432-11	CARBON 18K 5%	1/4W	C56	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R400	1-215-429-00	METAL 2.2K 1%	1/4W	C60	1-124-478-11	ELECT 100MF	20% 25V
<VARIABLE RESISTOR>				C61	1-163-038-00	CERAMIC CHIP 0.1MF	25V
RV1	1-237-515-21	RES, ADJ, CERMET 1K		C62	1-124-907-11	ELECT 10MF	20% 50V
RV2	1-237-499-21	RES, ADJ, CERMET 500		C63	1-163-038-00	CERAMIC CHIP 0.1MF	25V
RV3	1-237-501-21	RES, ADJ, CERMET 2K		C64	1-124-477-11	ELECT 47MF	20% 16V
RV4	1-237-501-21	RES, ADJ, CERMET 2K		C65	1-124-907-11	ELECT 10MF	20% 50V
RV5	1-237-517-21	RES, ADJ, CERMET 5K		C66	1-124-907-11	ELECT 10MF	20% 50V
RV6	1-237-517-21	RES, ADJ, CERMET 5K		C67	1-124-907-11	ELECT 10MF	20% 50V
RV7	1-237-504-21	RES, ADJ, CERMET 20K		C68	1-124-907-11	ELECT 10MF	20% 50V
RV8	1-237-504-21	RES, ADJ, CERMET 20K		C69	1-163-038-00	CERAMIC CHIP 0.1MF	25V
RV9	1-237-517-21	RES, ADJ, CERMET 5K		C70	1-163-038-00	CERAMIC CHIP 0.1MF	25V
RV10	1-237-517-21	RES, ADJ, CERMET 5K		C71	1-163-038-00	CERAMIC CHIP 0.1MF	25V
<CRYSTAL>				C72	1-163-038-00	CERAMIC CHIP 0.1MF	25V
X1	1-567-504-11	OSCILLATOR, CRYSTAL		C73	1-163-038-00	CERAMIC CHIP 0.1MF	25V
X2	1-567-409-11	VIBRATOR, CRYSTAL		C74	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*****				C75	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*A-1135-606-B BT BOARD, COMPLETE (BVM-1311 ONLY)				C76	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*****				C77	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*4-353-708-00 HOOK, FINGER				C78	1-163-038-00	CERAMIC CHIP 0.1MF	25V
<CAPACITOR>				C79	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C1	1-124-477-11	ELECT 47MF	20% 16V	C80	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C3	1-124-477-11	ELECT 47MF	20% 16V	C81	1-123-875-11	ELECT 10MF	20% 50V
C4	1-124-477-11	ELECT 47MF	20% 16V	C82	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C5	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C83	1-123-875-11	ELECT 10MF	20% 50V
C6	1-124-477-11	ELECT 47MF	20% 16V	C84	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C9	1-163-369-11	CERAMIC CHIP 47PF	5% 50V	C85	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C10	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C86	1-123-875-11	ELECT 10MF	20% 50V
C14	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	C87	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C15	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C88	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C16	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V	C89	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C17	1-163-093-00	CERAMIC CHIP 10PF	5% 50V	C90	1-124-907-11	ELECT 10MF	20% 50V
C18	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C100	1-124-478-11	ELECT 100MF	20% 25V
C19	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C101	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C20	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C102	1-124-907-11	ELECT 10MF	20% 50V
C21	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C103	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C22	1-163-099-00	CERAMIC CHIP 18PF	5% 50V	C104	1-124-477-11	ELECT 47MF	20% 16V
C23	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C105	1-124-907-11	ELECT 10MF	20% 50V
C30	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	C106	1-124-907-11	ELECT 10MF	20% 50V
C32	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C107	1-124-907-11	ELECT 10MF	20% 50V
C34	1-163-099-00	CERAMIC CHIP 18PF	5% 50V	C108	1-124-907-11	ELECT 10MF	20% 50V
C37	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C109	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C38	1-163-222-11	CERAMIC CHIP 5PF	0.25PF 50V	C110	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C40	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C111	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C42	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C112	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C113	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C114	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C115	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C116	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C117	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C118	1-163-038-00	CERAMIC CHIP 0.1MF	25V

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C119	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D3	8-719-400-18	DIODE MA152WK	
C331	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	D4	8-719-400-18	DIODE MA152WK	
C332	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	D5	8-719-400-18	DIODE MA152WK	
C333	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	D6	8-719-104-34	DIODE 1S2836	
C334	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	D7	8-719-400-18	DIODE MA152WK	
C335	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	D8	8-719-104-34	DIODE 1S2836	
C336	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D9	8-719-104-34	DIODE 1S2836	
C337	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D331	8-719-400-18	DIODE MA152WK	
C338	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D341	8-719-400-18	DIODE MA152WK	
C339	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D361	8-719-400-18	DIODE MA152WK	
C341	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	<DELAY LINE>			
C342	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	DL1	1-415-348-21	DELAY LINE	
C343	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	DL2	1-415-477-11	DELAY LINE	
C344	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	DL3	1-415-700-11	DELAY LINE	
C345	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	DL4	1-415-654-12	DELAY LINE	
C346	1-163-038-00	CERAMIC CHIP 0.1MF	25V	DL5	1-415-700-11	DELAY LINE	
C347	1-163-038-00	CERAMIC CHIP 0.1MF	25V	DL6	1-415-700-11	DELAY LINE	
C348	1-163-038-00	CERAMIC CHIP 0.1MF	25V	DL7	1-415-348-21	DELAY LINE	
C349	1-163-038-00	CERAMIC CHIP 0.1MF	25V	DL8	1-415-700-11	DELAY LINE	
C361	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	DL9	1-415-727-11	DELAY LINE	
C362	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	<FILTER>			
C363	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	FL1	1-236-562-11	FILTER, LOW PASS	
C364	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	FL2	1-236-561-11	FILTER, LOW PASS	
C365	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	FL3	1-236-732-11	FILTER, LOW PASS	
C366	1-163-038-00	CERAMIC CHIP 0.1MF	25V	<IC>			
C367	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC1	8-759-800-81	IC LA7016	
C368	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC2	8-759-800-81	IC LA7016	
C369	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC3	8-759-520-06	IC XRA17809T	
C501	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC4	8-759-701-75	IC NJM7805FA	
C502	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC331	8-752-334-78	IC CXL1009P-1	
C503	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC341	8-752-334-78	IC CXL1009P-1	
C504	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC361	8-752-330-14	IC CXL1009P	
C505	1-163-038-00	CERAMIC CHIP 0.1MF	25V	IC501	8-752-053-68	IC CXA1539P	
C506	1-163-038-00	CERAMIC CHIP 0.1MF	25V	<IC SOCKET>			
C507	1-163-038-00	CERAMIC CHIP 0.1MF	25V	ICS331*1-526-656-00	SOCKET, IC (DP) 20P		
C508	1-163-038-00	CERAMIC CHIP 0.1MF	25V	ICS341*1-526-656-00	SOCKET, IC (DP) 20P		
C509	1-163-038-00	CERAMIC CHIP 0.1MF	25V	ICS361*1-526-656-00	SOCKET, IC (DP) 20P		
C510	1-163-038-00	CERAMIC CHIP 0.1MF	25V	ICS501*1-526-659-00	SOCKET, IC (DP) 28P		
C511	1-163-038-00	CERAMIC CHIP 0.1MF	25V	<COIL>			
C512	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L1	1-410-196-11	INDUCTOR CHIP 2.2UH	
C513	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L2	1-410-200-31	INDUCTOR CHIP 4.7UH	
C514	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L3	1-410-192-51	INDUCTOR CHIP 1UH	
C515	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L4	1-216-296-00	METAL GLAZE 0 5% 1/8W	
C516	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L5	1-216-296-00	METAL GLAZE 0 5% 1/8W	
C517	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L6	1-410-196-11	INDUCTOR CHIP 2.2UH	
C518	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L7	1-410-470-11	INDUCTOR 10UH	
C519	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L8	1-410-470-11	INDUCTOR 10UH	
C520	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L9	1-410-204-31	INDUCTOR CHIP 10UH	
C521	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L10	1-408-419-00	INDUCTOR 68UH	
C522	1-163-038-00	CERAMIC CHIP 0.1MF	25V	L11	1-410-200-31	INDUCTOR CHIP 4.7UH	
<TRIMMER>				L12	1-410-200-31	INDUCTOR CHIP 4.7UH	
CV1	1-141-304-21	TRIMMER, CERAMIC		L13	1-410-196-11	INDUCTOR CHIP 2.2UH	
CV2	1-141-304-21	TRIMMER, CERAMIC		L14	1-410-204-31	INDUCTOR CHIP 10UH	
CV3	1-141-304-21	TRIMMER, CERAMIC		L15	1-410-216-31	INDUCTOR CHIP 100UH	
CV4	1-141-304-21	TRIMMER, CERAMIC		<DIODE>			
CV5	1-141-304-21	TRIMMER, CERAMIC		D1	8-719-104-34	DIODE 1S2836	
CV6	1-141-304-21	TRIMMER, CERAMIC		D2	8-719-105-91	DIODE RD5.6M-B2	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<TRANSISTOR>				JW1	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q1	8-729-216-22	TRANSISTOR 2SA1162-G		JW2	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW3	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q3	8-729-122-63	TRANSISTOR 2SA1226-E4		JW5	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q4	8-729-175-72	TRANSISTOR 2SC2757-T33		JW11	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q5	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW12	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q6	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW13	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q7	8-729-122-63	TRANSISTOR 2SA1226-E4		JW14	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q8	8-729-216-22	TRANSISTOR 2SA1162-G		JW15	1-216-295-00	METAL GLAZE	0 5% 1/10W
Q9	8-729-122-63	TRANSISTOR 2SA1226-E4		R1	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q10	8-729-175-72	TRANSISTOR 2SC2757-T33		R2	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q11	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R3	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q12	8-729-122-63	TRANSISTOR 2SA1226-E4		R4	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q13	8-729-175-72	TRANSISTOR 2SC2757-T33		R5	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q14	8-729-175-72	TRANSISTOR 2SC2757-T33		R6	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q15	8-729-216-22	TRANSISTOR 2SA1162-G		R7	1-216-075-00	METAL GLAZE	12K 5% 1/10W
Q16	8-729-107-46	TRANSISTOR 2SC3624A-L15		R8	1-216-643-11	METAL CHIP	470 0.50% 1/10W
Q17	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R9	1-216-661-11	METAL CHIP	2.7K 0.50% 1/10W
Q18	8-729-216-22	TRANSISTOR 2SA1162-G		R10	1-216-643-11	METAL CHIP	470 0.50% 1/10W
Q19	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R11	1-216-661-11	METAL CHIP	2.7K 0.50% 1/10W
Q20	8-729-175-72	TRANSISTOR 2SC2757-T33		R12	1-216-675-11	METAL CHIP	10K 0.50% 1/10W
Q21	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R13	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q22	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R14	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W
Q23	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R15	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q24	8-729-216-22	TRANSISTOR 2SA1162-G		R16	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q25	8-729-107-46	TRANSISTOR 2SC3624A-L15		R17	1-216-075-00	METAL GLAZE	12K 5% 1/10W
Q32	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R18	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q33	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R19	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q34	8-729-216-22	TRANSISTOR 2SA1162-G		R20	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q35	8-729-216-22	TRANSISTOR 2SA1162-G		R21	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q36	8-729-122-63	TRANSISTOR 2SA1226-E4		R22	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q37	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R23	1-216-635-11	METAL CHIP	220 0.50% 1/10W
Q38	8-729-122-63	TRANSISTOR 2SA1226-E4		R24	1-216-635-11	METAL CHIP	220 0.50% 1/10W
Q39	8-729-175-72	TRANSISTOR 2SC2757-T33		R25	1-216-075-00	METAL GLAZE	12K 5% 1/10W
Q40	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R26	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
Q41	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R27	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q42	8-729-216-22	TRANSISTOR 2SA1162-G		R28	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q43	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R29	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q44	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R30	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
Q45	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R31	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q52	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R33	1-216-665-11	METAL CHIP	3.9K 0.50% 1/10W
Q54	8-729-216-22	TRANSISTOR 2SA1162-G		R34	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q56	8-729-122-63	TRANSISTOR 2SA1226-E4		R35	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
Q57	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R36	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q58	8-729-122-63	TRANSISTOR 2SA1226-E4		R37	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q59	8-729-175-72	TRANSISTOR 2SC2757-T33		R38	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
Q60	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R39	1-216-635-11	METAL CHIP	220 0.50% 1/10W
Q61	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R40	1-216-630-11	METAL CHIP	130 0.50% 1/10W
Q62	8-729-216-22	TRANSISTOR 2SA1162-G		R41	1-216-630-11	METAL CHIP	130 0.50% 1/10W
Q65	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R42	1-216-635-11	METAL CHIP	220 0.50% 1/10W
Q71	8-729-175-72	TRANSISTOR 2SC2757-T33		R43	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W
Q72	8-729-122-63	TRANSISTOR 2SA1226-E4		R44	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q73	8-729-175-72	TRANSISTOR 2SC2757-T33		R45	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
Q74	8-729-122-63	TRANSISTOR 2SA1226-E4		R46	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q81	8-729-901-06	TRANSISTOR DTA144EK		R47	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q82	8-729-901-01	TRANSISTOR DTC144EK		R48	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q83	8-729-901-06	TRANSISTOR DTA144EK		R49	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q84	8-729-901-06	TRANSISTOR DTA144EK		R50	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q85	8-729-140-97	TRANSISTOR 2SB734-34		R51	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q86	8-729-140-96	TRANSISTOR 2SD774-34		R52	1-216-097-00	METAL GLAZE	100K 5% 1/10W
<RESISTOR>				R53	1-216-075-00	METAL GLAZE	12K 5% 1/10W
				R54	1-216-025-00	METAL GLAZE	100 5% 1/10W
				R55	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W

BT

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R56	1-216-025-00	METAL GLAZE	100 5% 1/10W	R133	1-216-025-00	METAL GLAZE	100 5% 1/10W
R57	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R134	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R58	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R135	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R59	1-216-025-00	METAL GLAZE	100 5% 1/10W	R136	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R60	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R137	1-216-025-00	METAL GLAZE	100 5% 1/10W
R61	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R138	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R62	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R139	1-216-025-00	METAL GLAZE	100 5% 1/10W
R63	1-216-025-00	METAL GLAZE	100 5% 1/10W	R140	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R64	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R141	1-216-025-00	METAL GLAZE	100 5% 1/10W
R65	1-216-025-00	METAL GLAZE	100 5% 1/10W	R142	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R143	1-216-025-00	METAL GLAZE	100 5% 1/10W
R67	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R150	1-216-025-00	METAL GLAZE	100 5% 1/10W
R68	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R153	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R69	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R154	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R70	1-216-025-00	METAL GLAZE	100 5% 1/10W	R157	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R71	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R158	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R72	1-216-025-00	METAL GLAZE	100 5% 1/10W	R161	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R73	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R163	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R74	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R164	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R75	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R165	1-216-025-00	METAL GLAZE	100 5% 1/10W
R76	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R166	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R77	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R167	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R78	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R169	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R79	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R170	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R80	1-216-025-00	METAL GLAZE	100 5% 1/10W	R171	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W
R81	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R172	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W
R82	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R173	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R83	1-216-025-00	METAL GLAZE	100 5% 1/10W	R174	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R84	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R175	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R85	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R176	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R86	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R177	1-216-025-00	METAL GLAZE	100 5% 1/10W
R87	1-216-025-00	METAL GLAZE	100 5% 1/10W	R178	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R88	1-216-025-00	METAL GLAZE	100 5% 1/10W	R179	1-216-025-00	METAL GLAZE	100 5% 1/10W
R89	1-216-025-00	METAL GLAZE	100 5% 1/10W	R181	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R103	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R182	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R104	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R183	1-216-025-00	METAL GLAZE	100 5% 1/10W
R105	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R184	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R106	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R185	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R107	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R186	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R108	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R191	1-216-025-00	METAL GLAZE	100 5% 1/10W
R109	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R192	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R110	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R193	1-216-025-00	METAL GLAZE	100 5% 1/10W
R111	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R201	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R112	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R202	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R113	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R203	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R114	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R204	1-216-033-00	METAL GLAZE	220 5% 1/10W
R115	1-216-025-00	METAL GLAZE	100 5% 1/10W	R205	1-216-033-00	METAL GLAZE	220 5% 1/10W
R116	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R206	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R117	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R207	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R118	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W	R208	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R119	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R209	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R120	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R210	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R121	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W	R211	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R122	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R212	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R123	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R213	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R124	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R214	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R125	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R215	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R126	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R216	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R127	1-216-025-00	METAL GLAZE	100 5% 1/10W	R217	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R128	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R218	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R129	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R219	1-215-881-11	METAL OXIDE	15 5% 2W F
R130	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R331	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R131	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R332	1-216-288-11	METAL GLAZE	5.6M 5% 1/8W
R132	1-216-651-11	METAL CHIP	1K 0.50% 1/10W				

REF.NO.	PART NO.	DESCRIPTION				REMARK	REF.NO.	PART NO.	DESCRIPTION				REMARK
R341	1-216-121-00	METAL GLAZE	1M	5%	1/10W		C5	1-126-235-11	ELECT	100MF	20%	16V	
R342	1-216-288-11	METAL GLAZE	5.6M	5%	1/8W		C6	1-101-004-00	CERAMIC	0.01MF		50V	
R361	1-216-121-00	METAL GLAZE	1M	5%	1/10W		C7	1-108-692-11	MYLAR	0.01MF	10%	200V	
R362	1-216-288-11	METAL GLAZE	5.6M	5%	1/8W		C8	1-126-235-11	ELECT	100MF	20%	16V	
R501	1-216-121-00	METAL GLAZE	1M	5%	1/10W		C9	1-101-004-00	CERAMIC	0.01MF		50V	
R502	1-216-049-00	METAL GLAZE	1K	5%	1/10W		C10	1-102-951-00	CERAMIC	15PF	5%	50V	
<VARIABLE RESISTOR>							C11	1-102-951-00	CERAMIC	15PF	5%	50V	
RV1	1-237-515-21	RES, ADJ, CERMET	1K				C12	1-102-951-00	CERAMIC	15PF	5%	50V	
RV2	1-237-517-21	RES, ADJ, CERMET	5K				<RESISTOR>						
RV3	1-237-515-21	RES, ADJ, CERMET	1K				R1	1-215-449-00	METAL	15K	1%	1/4W	
RV4	1-237-515-21	RES, ADJ, CERMET	1K				R2	1-215-449-00	METAL	15K	1%	1/4W	
RV5	1-237-515-21	RES, ADJ, CERMET	1K				R3	1-249-439-11	CARBON	68K	5%	1/4W	
RV6	1-237-517-21	RES, ADJ, CERMET	5K				<SWITCH>						
RV7	1-237-515-21	RES, ADJ, CERMET	1K				S1	1-570-857-11	SWITCH, SLIDE				
RV8	1-237-515-21	RES, ADJ, CERMET	1K				S2	1-570-857-11	SWITCH, SLIDE				
RV9	1-237-516-21	RES, ADJ, CERMET	2K				S3	1-570-857-11	SWITCH, SLIDE				
RV10	1-237-515-21	RES, ADJ, CERMET	1K				*****						
RV11	1-237-516-21	RES, ADJ, CERMET	2K				*1-618-786-11 QB BOARD						
RV12	1-237-515-21	RES, ADJ, CERMET	1K				*****						
<CRYSTAL>							<CAPACITOR>						
X1	1-567-790-11	VIBRATOR, CRYSTAL					C1	1-108-692-11	MYLAR	0.01MF	10%	200V	
*****							C2	1-126-235-11	ELECT	100MF	20%	16V	
*1-617-891-21 PB BOARD							C3	1-101-004-00	CERAMIC	0.01MF		50V	
*****							C4	1-108-692-11	MYLAR	0.01MF	10%	200V	
<CAPACITOR>							C5	1-126-235-11	ELECT	100MF	20%	16V	
C1	1-130-959-00	FILM	0.047MF	10%	400V		C6	1-101-004-00	CERAMIC	0.01MF		50V	
C2	1-130-959-00	FILM	0.047MF	10%	400V		C7	1-108-692-11	MYLAR	0.01MF	10%	200V	
<CONNECTOR>							C8	1-126-235-11	ELECT	100MF	20%	16V	
PB1	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P					C9	1-101-004-00	CERAMIC	0.01MF		50V	
<RESISTOR>							C10	1-102-951-00	CERAMIC	15PF	5%	50V	
R1	1-215-429-00	METAL	2.2K	1%	1/4W		C11	1-102-951-00	CERAMIC	15PF	5%	50V	
R2	1-215-445-00	METAL	10K	1%	1/4W		C12	1-102-951-00	CERAMIC	15PF	5%	50V	
R3	1-215-429-00	METAL	2.2K	1%	1/4W		<RESISTOR>						
R4	1-215-445-00	METAL	10K	1%	1/4W		R1	1-215-449-00	METAL	15K	1%	1/4W	
*****							R2	1-215-449-00	METAL	15K	1%	1/4W	
*1-617-895-11 QA BOARD							R3	1-215-449-00	METAL	15K	1%	1/4W	
*****							<SWITCH>						
<CAPACITOR>							S1	1-570-857-11	SWITCH, SLIDE				
C1	1-108-692-11	MYLAR	0.01MF	10%	200V		S2	1-570-857-11	SWITCH, SLIDE				
C2	1-126-235-11	ELECT	100MF	20%	16V		S3	1-570-857-11	SWITCH, SLIDE				
C3	1-101-004-00	CERAMIC	0.01MF		50V		*****						
C4	1-108-692-11	MYLAR	0.01MF	10%	200V		*1-617-885-12 GC BOARD						

							<CAPACITOR>						
							C1	1-126-233-11	ELECT	22MF	20%	25V	
							C2	1-126-233-11	ELECT	22MF	20%	25V	
							C3	1-126-233-11	ELECT	22MF	20%	25V	
							C4	1-126-233-11	ELECT	22MF	20%	25V	
							C5	1-126-233-11	ELECT	22MF	20%	25V	

GC GA

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C6	1-126-233-11	ELECT 22MF	20% 25V	C17	1-106-375-12	MYLAR 0.022MF	10% 100V
C7	1-126-233-11	ELECT 22MF	20% 25V	C18	1-108-638-11	MYLAR 0.1MF	10% 100V
C8	1-126-233-11	ELECT 22MF	20% 25V	C19	1-102-030-00	CERAMIC 330PF	10% 500V
C9	1-126-233-11	ELECT 22MF	20% 25V	C20	1-162-117-00	CERAMIC 100PF	10% 500V
C12	1-101-004-00	CERAMIC 0.01MF	50V	C21	1-102-038-00	CERAMIC 0.001MF	500V
C14	1-101-004-00	CERAMIC 0.01MF	50V	C22	1-162-117-00	CERAMIC 100PF	10% 500V
C16	1-101-004-00	CERAMIC 0.01MF	50V	C23	1-106-375-12	MYLAR 0.022MF	10% 100V
C17	1-101-004-00	CERAMIC 0.01MF	50V	C24	1-108-638-11	MYLAR 0.1MF	10% 100V
C18	1-101-004-00	CERAMIC 0.01MF	50V	C25	1-124-903-11	ELECT 1MF	20% 50V
<CONNECTOR>				C26	1-101-361-00	CERAMIC 150PF	5% 50V
GC1	*1-566-044-11	PIN, CONNECTOR 5P		C27	1-101-361-00	CERAMIC 150PF	5% 50V
GC2	*1-566-057-11	PIN, CONNECTOR 5P		C28	1-126-966-11	ELECT 10MF	20% 16V
GC3	*1-566-044-11	PIN, CONNECTOR 5P		C29	1-124-910-11	ELECT 47MF	20% 25V
<IC>				C30	1-162-117-00	CERAMIC 100PF	10% 500V
IC1	8-759-929-65	IC LM7912CT		C31	1-102-030-00	CERAMIC 330PF	10% 500V
IC2	8-759-929-65	IC LM7912CT		C32	1-124-903-11	ELECT 1MF	20% 50V
IC3	8-759-701-79	IC NJM7812FA		C33	1-101-361-00	CERAMIC 150PF	5% 50V
IC4	8-759-701-79	IC NJM7812FA		C34	1-101-361-00	CERAMIC 150PF	5% 50V
*****				C35	1-124-903-11	ELECT 1MF	20% 50V
*A-1316-089-A GA BOARD, COMPLETE (BVM-1311 ONLY)				C36	1-124-910-11	ELECT 47MF	20% 25V
*****				C37	1-130-734-00	FILM 0.0068MF	5% 50V
(INCLUDING GB BOARD)				C38	1-136-165-00	FILM 0.1MF	5% 50V
Δ 1-533-167-21 HOLDER, FUSE				C39	1-136-165-00	FILM 0.1MF	5% 50V
Δ 1-533-168-21 HOLDER, FUSE				C40	1-123-381-00	ELECT 2.2MF	20% 50V
1-535-316-11 TERMINAL, GROUND (M4)				C41	1-102-038-00	CERAMIC 0.001MF	500V
Δ 1-570-173-22 SWITCH, VOLTAGE CHANGE				C42	1-136-165-00	FILM 0.1MF	5% 50V
Δ 1-580-375-11 INLET 3P				C43	1-136-165-00	FILM 0.1MF	5% 50V
2-990-241-02 HOLDER (A), PLUG				C44	1-126-966-11	ELECT 10MF	20% 16V
*3-337-402-01 BAND, BINDING				C45	1-162-132-00	CERAMIC 270PF	10% 2KV
*4-347-706-00 HEAT SINK (TR)				C46	1-126-966-11	ELECT 10MF	20% 16V
*4-371-879-02 COVER, AC SELECT				C47	1-136-173-00	FILM 0.47MF	5% 50V
4-379-403-01 SPACER (G1), POLISHING				C48	1-136-173-00	FILM 0.47MF	5% 50V
*4-379-408-01 INSULATOR (G3)				C49	1-126-966-11	ELECT 10MF	20% 16V
*4-379-409-01 NUT, PLATE				C50	1-101-006-00	CERAMIC 0.047MF	50V
4-379-410-01 SPACER (G2), POLISHING				C51	1-101-006-00	CERAMIC 0.047MF	50V
*4-379-430-01 PANEL, POWER				C52	1-101-006-00	CERAMIC 0.047MF	50V
*4-386-847-01 HEAT SINK (S.R.T)				C53	1-101-006-00	CERAMIC 0.047MF	50V
*4-386-848-01 BAND (S.R.T)				C54	1-101-006-00	CERAMIC 0.047MF	50V
*4-393-031-01 COVER, FUSE HOLDER				C55	1-126-966-11	ELECT 10MF	20% 16V
*4-601-466-11 COVER, 3P INLET				C56	1-136-201-11	FILM 0.22MF	5% 400V
<CAPACITOR>				C57	1-124-915-11	ELECT 10MF	20% 25V
C1	1-124-024-00	ELECT 4.7MF	20% 350V	C58	1-124-902-00	ELECT 0.47MF	20% 50V
C2	1-124-024-00	ELECT 4.7MF	20% 350V	C59	1-130-734-00	FILM 0.0068MF	5% 50V
C3	1-162-117-00	CERAMIC 100PF	10% 500V	C60	1-102-228-00	CERAMIC 470PF	10% 500V
C4	1-162-117-00	CERAMIC 100PF	10% 500V	C61	1-102-228-00	CERAMIC 470PF	10% 500V
C5	1-162-117-00	CERAMIC 100PF	10% 500V	C62	1-102-228-00	CERAMIC 470PF	10% 500V
C6	1-162-117-00	CERAMIC 100PF	10% 500V	C63	1-102-228-00	CERAMIC 470PF	10% 500V
C7	1-126-104-11	ELECT 470MF	20% 25V	C64	1-124-024-00	ELECT 4.7MF	20% 350V
C8	1-126-105-11	ELECT 1000MF	20% 25V	C65	1-124-024-00	ELECT 4.7MF	20% 350V
C9	1-126-104-11	ELECT 470MF	20% 25V	C66	1-162-117-00	CERAMIC 100PF	10% 500V
C10	1-126-105-11	ELECT 1000MF	20% 25V	C67	1-162-117-00	CERAMIC 100PF	10% 500V
C11	1-126-104-11	ELECT 470MF	20% 25V	C68	1-162-117-00	CERAMIC 100PF	10% 500V
C12	1-124-602-00	ELECT 2200MF	20% 25V	C69	1-124-562-11	ELECT 47MF	20% 200V
C13	1-126-104-11	ELECT 470MF	20% 25V	C70	1-124-171-00	ELECT 100MF	20% 160V
C14	1-124-602-00	ELECT 2200MF	20% 25V	C71	1-162-117-00	CERAMIC 100PF	10% 500V
C15	1-124-360-00	ELECT 1000MF	20% 16V	C72	1-124-562-11	ELECT 47MF	20% 200V
C16	1-126-103-11	ELECT 470MF	20% 16V	C73	1-124-171-00	ELECT 100MF	20% 160V
				C74	1-124-122-11	ELECT 100MF	20% 16V
				C75	1-124-122-11	ELECT 100MF	20% 16V
				C76	Δ 1-161-953-52	CERAMIC 0.0047MF	20% 400V
				C77	Δ 1-161-953-52	CERAMIC 0.0047MF	20% 400V
				C78	1-162-599-12	CERAMIC 0.0047MF	20% 400V
				C79	1-162-599-12	CERAMIC 0.0047MF	20% 400V
				C80	1-125-658-11	ELECT 560MF	20% 250V

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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7-27

GA

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R17	1-247-700-11	CARBON	100 5% 1/4W	R97	1-215-904-11	METAL OXIDE	100K 5% 2W F
R18	1-249-425-11	CARBON	4.7K 5% 1/4W	R98	1-215-904-11	METAL OXIDE	100K 5% 2W F
R19	1-249-419-11	CARBON	1.5K 5% 1/4W	<VARIABLE RESISTOR>			
R20	1-247-838-00	CARBON	2K 5% 1/4W	RV1	1-237-514-21	RES, ADJ, CERMET	500
R21	1-249-417-11	CARBON	1K 5% 1/4W	RV2	1-237-515-21	RES, ADJ, CERMET	1K
R22	1-249-409-11	CARBON	220 5% 1/4W	<RELAY>			
R23	1-249-417-11	CARBON	1K 5% 1/4W	RY1	Δ 1-515-805-11	RELAY, POWER	
R24	1-249-421-11	CARBON	2.2K 5% 1/4W	<TRANSFORMER>			
R25	1-249-409-11	CARBON	220 5% 1/4W	T1	Δ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)	
R26	1-247-700-11	CARBON	100 5% 1/4W	T2	Δ 1-447-106-11	TRANSFORMER, DRIVE	
R27	1-247-713-11	CARBON	1K 5% 1/4W	T3	Δ 1-421-624-12	TRANSFORMER, CURRENT	
R28	1-247-713-11	CARBON	1K 5% 1/4W	T4	Δ 1-447-426-12	TRANSFORMER, CONVERTER	
R29	1-247-700-11	CARBON	100 5% 1/4W	T5	Δ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)	
R30	1-215-886-11	METAL OXIDE	100 5% 2W F	T6	Δ 1-447-106-11	TRANSFORMER, DRIVE	
R31	1-215-886-11	METAL OXIDE	100 5% 2W F	T7	Δ 1-421-624-12	TRANSFORMER, CURRENT	
R32	1-215-886-11	METAL OXIDE	100 5% 2W F	<THERMISTOR>			
R33	1-247-697-11	CARBON	56 5% 1/4W F	TH1	Δ 1-800-820-12	THERMISTOR, POWER	
R34	1-247-697-11	CARBON	56 5% 1/4W F	THP1	Δ 1-806-387-12	THERMISTOR (POSITIVE)	
R35	1-215-863-11	METAL OXIDE	100 5% 1W F	THP2	Δ 1-800-686-33	THERMISTOR (POSITIVE)	
R36	1-249-425-11	CARBON	4.7K 5% 1/4W	*****			
R37	1-249-420-11	CARBON	1.8K 5% 1/4W	*A-1316-090-A GA BOARD, COMPLETE (BVM-1411P ONLY)			
R38	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R39	1-249-413-11	CARBON	470 5% 1/4W	(INCLUDING GB BOARD)			
R40	1-215-453-00	METAL	22K 1% 1/4W	Δ 1-533-167-21	HOLDER, FUSE		
R41	1-249-425-11	CARBON	4.7K 5% 1/4W	Δ 1-533-168-21	HOLDER, FUSE		
R42	1-215-437-00	METAL	4.7K 1% 1/4W	1-535-316-11	TERMINAL, GROUND (M4)		
R43	1-215-435-00	METAL	3.9K 1% 1/4W	Δ 1-570-173-22	SWITCH, VOLTAGE CHANGE		
R44	1-215-427-00	METAL	1.8K 1% 1/4W	Δ 1-580-375-11	INLET 3P		
R45	1-247-713-11	CARBON	1K 5% 1/4W	2-990-241-02	HOLDER (A), PLUG		
R46	1-249-417-11	CARBON	1K 5% 1/4W	*3-337-402-01	BAND, BINDING		
R47	1-216-995-11	METAL	820 1% 10W	*4-347-706-00	HEAT SINK (TR)		
R48	1-215-866-11	METAL OXIDE	330 5% 1W F	*4-371-879-02	COVER, AC SELECT		
Δ R52	Δ	METAL OXIDE	2W F	4-379-403-01	SPACER (G1), POLISHING		
Δ R53	Δ	METAL	1/4W F	*4-379-408-01	INSULATOR (G3)		
R54	1-215-901-00	METAL OXIDE	33K 5% 2W F	*4-379-409-01	NUT, PLATE		
R55	1-215-426-00	METAL	1.6K 1% 1/4W	4-379-410-01	SPACER (G2), POLISHING		
R60	1-249-420-11	CARBON	1.8K 5% 1/4W	*4-379-430-01	PANEL, POWER		
R61	1-249-420-11	CARBON	1.8K 5% 1/4W	*4-386-847-01	HEAT SINK (S.R.T)		
R62	1-249-429-11	CARBON	10K 5% 1/4W	*4-386-848-01	BAND (S.R.T)		
R64	1-249-426-11	CARBON	5.6K 5% 1/4W	*4-393-031-01	COVER, FUSE HOLDER		
R65	1-215-437-00	METAL	4.7K 1% 1/4W	*4-601-466-11	COVER, 3P INLET		
R66	1-215-453-00	METAL	22K 1% 1/4W	<CAPACITOR>			
Δ R67	Δ	METAL	1/2W	C1	1-124-024-00	ELECT	4.7MF 20% 350V
Δ R68	Δ	METAL	1/4W	C2	1-124-024-00	ELECT	4.7MF 20% 350V
R74	1-215-889-00	METAL OXIDE	330 5% 2W F	C3	1-162-117-00	CERAMIC	100PF 10% 500V
R77	1-215-433-00	METAL	3.3K 1% 1/4W	C4	1-162-117-00	CERAMIC	100PF 10% 500V
R78	1-215-433-00	METAL	3.3K 1% 1/4W	C5	1-162-117-00	CERAMIC	100PF 10% 500V
R80	1-202-643-35	SOLID	820K 10% 1/2W	C6	1-162-117-00	CERAMIC	100PF 10% 500V
R81	1-215-461-00	METAL	47K 1% 1/4W	C7	1-126-104-11	ELECT	470MF 20% 25V
R82	1-215-461-00	METAL	47K 1% 1/4W	C8	1-126-105-11	ELECT	1000MF 20% 25V
R83	1-215-461-00	METAL	47K 1% 1/4W	C9	1-126-104-11	ELECT	470MF 20% 25V
R84	1-215-459-00	METAL	39K 1% 1/4W	C10	1-126-105-11	ELECT	1000MF 20% 25V
R85	1-215-449-00	METAL	15K 1% 1/4W				
R86	1-215-437-00	METAL	4.7K 1% 1/4W				
R87	1-249-405-11	CARBON	100 5% 1/4W				
R88	1-249-433-11	CARBON	22K 5% 1/4W				
R89	1-249-429-11	CARBON	10K 5% 1/4W				
R90	1-249-429-11	CARBON	10K 5% 1/4W				
R91	1-249-429-11	CARBON	10K 5% 1/4W				
Δ R92	Δ 1-217-295-11	WIREWOUND	5.6 10% 5W F				
R93	1-215-886-11	METAL OXIDE	100 5% 2W F				
R94	1-205-538-00	WIREWOUND	4.7 10% 10W				
R95	1-215-904-11	METAL OXIDE	100K 5% 2W F				
R96	1-215-904-11	METAL OXIDE	100K 5% 2W F				

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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GA

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<CONNECTOR>				R9	1-249-382-11	CARBON	1.2 5% 1/4W F
GA1	1-506-348-XX	PIN, CONNECTOR 3P		R10	1-249-447-11	CARBON	1 5% 1/4W F
GA2	*1-506-371-00	PIN, CONNECTOR 2P		R11	1-247-692-11	CARBON	22 5% 1/4W
GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P		R12	1-249-418-11	CARBON	1.2K 5% 1/4W
GA4	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P		R13	1-215-866-11	METAL OXIDE	330 5% 1W F
GA5	*1-566-055-11	PIN, CONNECTOR 3P		R14	1-247-700-11	CARBON	100 5% 1/4W
GA6	*1-566-055-11	PIN, CONNECTOR 3P		R15	1-247-709-11	CARBON	510 5% 1/4W
GA7	*1-566-058-11	PIN, CONNECTOR 6P		R16	1-247-709-11	CARBON	510 5% 1/4W
GA8	*1-566-057-11	PIN, CONNECTOR 5P		R17	1-247-700-11	CARBON	100 5% 1/4W
<IC>				R18	1-249-425-11	CARBON	4.7K 5% 1/4W
IC1	1-806-805-11	IC MC5433		R19	1-249-419-11	CARBON	1.5K 5% 1/4W
IC2	8-759-904-94	IC TL494CN		R20	1-247-838-00	CARBON	2K 5% 1/4W
IC3	8-759-904-94	IC TL494CN		R21	1-249-417-11	CARBON	1K 5% 1/4W
<COIL>				R22	1-249-409-11	CARBON	220 5% 1/4W
L3	1-459-643-11	COIL, CHOKE 525UH		R23	1-249-417-11	CARBON	1K 5% 1/4W
L4	1-459-643-11	COIL, CHOKE 525UH		R24	1-249-421-11	CARBON	2.2K 5% 1/4W
L5	1-459-643-11	COIL, CHOKE 525UH		R25	1-249-409-11	CARBON	220 5% 1/4W
L6	1-459-643-11	COIL, CHOKE 525UH		R26	1-247-700-11	CARBON	100 5% 1/4W
L7	1-459-207-00	COIL, CORE		R27	1-247-713-11	CARBON	1K 5% 1/4W
L8	1-459-644-11	COIL, CHOKE 2.9MMH		R28	1-247-713-11	CARBON	1K 5% 1/4W
L9	1-459-645-11	COIL, CHOKE 20MMH		R29	1-247-700-11	CARBON	100 5% 1/4W
L10	1-421-329-00	COIL, CHOKE		R30	1-215-886-11	METAL OXIDE	100 5% 2W F
L11	1-421-329-00	COIL, CHOKE		R31	1-215-886-11	METAL OXIDE	100 5% 2W F
L12	1-421-329-00	COIL, CHOKE		R32	1-215-886-11	METAL OXIDE	100 5% 2W F
L13	1-421-329-00	COIL, CHOKE		R33	1-247-697-11	CARBON	56 5% 1/4W F
L14	1-421-329-00	COIL, CHOKE		R34	1-247-697-11	CARBON	56 5% 1/4W F
L15	1-421-329-00	COIL, CHOKE		R35	1-215-863-11	METAL OXIDE	100 5% 1W F
L16	1-421-329-00	COIL, CHOKE		R36	1-249-425-11	CARBON	4.7K 5% 1/4W
L17	Δ 1-421-590-11	TRANSFORMER, LINE FILTER		R37	1-249-420-11	CARBON	1.8K 5% 1/4W
L18	Δ 1-421-590-11	TRANSFORMER, LINE FILTER		R38	1-249-429-11	CARBON	10K 5% 1/4W
<TRANSISTOR>				R39	1-249-413-11	CARBON	470 5% 1/4W
Q1	8-729-301-76	TRANSISTOR STR8124-R		R40	1-215-453-00	METAL	22K 1% 1/4W
Q2	8-729-301-76	TRANSISTOR STR8124-R		R41	1-249-425-11	CARBON	4.7K 5% 1/4W
Q3	8-729-140-96	TRANSISTOR 2SD774-34		R42	1-215-437-00	METAL	4.7K 1% 1/4W
Q4	8-729-140-96	TRANSISTOR 2SD774-34		R43	1-215-435-00	METAL	3.9K 1% 1/4W
Q5	8-729-140-96	TRANSISTOR 2SD774-34		R44	1-215-427-00	METAL	1.8K 1% 1/4W
Q6	8-729-140-96	TRANSISTOR 2SD774-34		R45	1-247-713-11	CARBON	1K 5% 1/4W
Q7	8-729-140-97	TRANSISTOR 2SB734-34		R46	1-249-417-11	CARBON	1K 5% 1/4W
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE		R47	1-216-995-11	METAL	820 1% 10W
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R48	1-215-866-11	METAL OXIDE	330 5% 1W F
Q10	8-729-313-42	TRANSISTOR 2SD1134-C		Δ R52	Δ	METAL OXIDE	2W F
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		Δ R53	Δ	METAL	1/4W
Q12	8-729-140-96	TRANSISTOR 2SD774-34		R54	1-215-901-00	METAL OXIDE	33K 5% 2W F
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		R55	1-215-426-00	METAL	1.6K 1% 1/4W
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R60	1-249-420-11	CARBON	1.8K 5% 1/4W
<RESISTOR>				R61	1-249-420-11	CARBON	1.8K 5% 1/4W
R1	1-215-857-11	METAL OXIDE	10 5% 1W F	R62	1-249-429-11	CARBON	10K 5% 1/4W
R2	1-215-857-11	METAL OXIDE	10 5% 1W F	R64	1-249-426-11	CARBON	5.6K 5% 1/4W
R3	1-247-715-11	CARBON	1.5K 5% 1/4W	R65	1-215-437-00	METAL	4.7K 1% 1/4W
R4	1-215-857-11	METAL OXIDE	10 5% 1W F	R66	1-215-453-00	METAL	22K 1% 1/4W
R5	1-215-857-11	METAL OXIDE	10 5% 1W F	Δ R67	Δ	METAL	1/2W
R6	1-249-447-11	CARBON	1 5% 1/4W F	Δ R68	Δ	METAL	1/4W
R7	1-247-692-11	CARBON	22 5% 1/4W	R74	1-215-889-00	METAL OXIDE	330 5% 2W F
R8	1-249-418-11	CARBON	1.2K 5% 1/4W	R77	1-215-433-00	METAL	3.3K 1% 1/4W
				R78	1-215-433-00	METAL	3.3K 1% 1/4W
				Δ R80	Δ 1-202-643-35	SOLID	820K 10% 1/2W
				R81	1-215-461-00	METAL	47K 1% 1/4W
				R82	1-215-461-00	METAL	47K 1% 1/4W
				R83	1-215-461-00	METAL	47K 1% 1/4W
				R84	1-215-459-00	METAL	39K 1% 1/4W
				R85	1-215-449-00	METAL	15K 1% 1/4W
				R86	1-215-437-00	METAL	4.7K 1% 1/4W
				R87	1-249-405-11	CARBON	100 5% 1/4W

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GA GB C

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R88	1-249-433-11	CARBON 22K 5% 1/4W		D16	8-719-911-19	DIODE 1SS119	
R89	1-249-429-11	CARBON 10K 5% 1/4W		D17	8-719-110-08	DIODE RD8.2ESB2	
R90	1-249-429-11	CARBON 10K 5% 1/4W		D18	8-719-911-19	DIODE 1SS119	
R91	1-249-429-11	CARBON 10K 5% 1/4W		D19	8-719-911-19	DIODE 1SS119	
R92	Δ 1-217-295-11	WIREWOUND 5.6 10% 5W F		<CONNECTOR>			
R93	1-215-886-11	METAL OXIDE 100 5% 2W F		GA1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
R94	1-205-538-00	WIREWOUND 4.7 10% 10W		<TRANSISTOR>			
R95	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE	
R96	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
R97	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE	
R98	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<VARIABLE RESISTOR>				Q5	8-729-119-76	TRANSISTOR 2SA1175-HFE	
RV1	1-237-514-21	RES, ADJ, CERMET 500		Q6	8-729-119-76	TRANSISTOR 2SA1175-HFE	
RV2	1-237-515-21	RES, ADJ, CERMET 1K		Q7	8-729-119-76	TRANSISTOR 2SA1175-HFE	
<RELAY>				Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
RY1	Δ 1-515-805-11	RELAY, POWER		Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE	
<TRANSFORMER>				Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
T1	Δ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)		<RESISTOR>			
T2	Δ 1-447-106-11	TRANSFORMER, DRIVE		R1	1-249-427-11	CARBON 6.8K 5% 1/4W	
T3	Δ 1-421-624-12	TRANSFORMER, CURRENT		R2	1-249-428-11	CARBON 8.2K 5% 1/4W	
T4	Δ 1-447-426-12	TRANSFORMER, CONVERTER		R3	1-249-429-11	CARBON 10K 5% 1/4W	
T5	Δ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)		R4	1-249-427-11	CARBON 6.8K 5% 1/4W	
T6	Δ 1-447-106-11	TRANSFORMER, DRIVE		R5	1-249-420-11	CARBON 1.8K 5% 1/4W	
T7	Δ 1-421-624-12	TRANSFORMER, CURRENT		R6	1-249-427-11	CARBON 6.8K 5% 1/4W	
<THERMISTOR>				R7	1-249-420-11	CARBON 1.8K 5% 1/4W	
TH1	Δ 1-800-820-12	THERMISTOR, POWER		R8	1-249-429-11	CARBON 10K 5% 1/4W	
THP1	Δ 1-806-387-12	THERMISTOR (POSITIVE)		R9	1-249-427-11	CARBON 6.8K 5% 1/4W	
THP2	Δ 1-800-686-33	THERMISTOR (POSITIVE)		R10	1-249-428-11	CARBON 8.2K 5% 1/4W	
*****				R11	1-249-424-11	CARBON 3.9K 5% 1/4W	
*1-627-679-11	GB BOARD	*****		R12	1-249-421-11	CARBON 2.2K 5% 1/4W	
<CAPACITOR>				R13	1-249-425-11	CARBON 4.7K 5% 1/4W	
C1	1-124-903-11	ELECT 1MF 20% 50V		R14	1-249-421-11	CARBON 2.2K 5% 1/4W	
C2	1-124-903-11	ELECT 1MF 20% 50V		R15	1-249-424-11	CARBON 3.9K 5% 1/4W	
<DIODE>				R16	1-249-421-11	CARBON 2.2K 5% 1/4W	
D1	8-719-911-19	DIODE 1SS119		R17	1-249-425-11	CARBON 4.7K 5% 1/4W	
D2	8-719-110-08	DIODE RD8.2ESB2		R18	1-249-421-11	CARBON 2.2K 5% 1/4W	
D3	8-719-911-19	DIODE 1SS119		R19	1-249-429-11	CARBON 10K 5% 1/4W	
D4	8-719-911-19	DIODE 1SS119		R20	1-249-429-11	CARBON 10K 5% 1/4W	
D5	8-719-911-19	DIODE 1SS119		R21	1-249-429-11	CARBON 10K 5% 1/4W	
D6	8-719-110-08	DIODE RD8.2ESB2		R22	1-249-423-11	CARBON 3.3K 5% 1/4W	
D7	8-719-812-41	DIODE TLR124		R23	1-249-423-11	CARBON 3.3K 5% 1/4W	
D8	8-719-911-19	DIODE 1SS119		R24	1-249-429-11	CARBON 10K 5% 1/4W	
D9	8-719-911-19	DIODE 1SS119		R25	1-249-429-11	CARBON 10K 5% 1/4W	
D10	8-719-812-41	DIODE TLR124		*****			
D11	8-719-110-08	DIODE RD8.2ESB2		*1-617-889-11	C BOARD	*****	
D12	8-719-911-19	DIODE 1SS119		Δ 1-526-771-11	SOCKET, CRT		
D13	8-719-911-19	DIODE 1SS119		1-556-880-81	LEAD ASSY, HIGH-VOLTAGE		
D14	8-719-911-19	DIODE 1SS119		<CAPACITOR>			
D15	8-719-911-19	DIODE 1SS119		C1	1-162-114-00	CERAMIC 0.0047MF 2KV	
<CONNECTOR>				C2	1-162-114-00	CERAMIC 0.0047MF 2KV	
C1	*1-566-054-11	PIN, CONNECTOR 2P		<CONNECTOR>			

7-32

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EB PA

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
Q16	8-729-255-12	TRANSISTOR 2SC2551-0					
Q17	8-729-200-17	TRANSISTOR 2SA1091-0					
Q18	8-729-119-80	TRANSISTOR 2SC2688-LK					
Q19	8-729-119-80	TRANSISTOR 2SC2688-LK					
<RESISTOR>				<CAPACITOR>			
R1	1-249-429-11	CARBON 10K 5% 1/4W		C101	1-124-046-00	ELECT 10MF 20% 160V	
R2	1-249-433-11	CARBON 22K 5% 1/4W		C102	1-124-910-11	ELECT 47MF 20% 25V	
R3	1-249-425-11	CARBON 4.7K 5% 1/4W		C103	1-123-024-21	ELECT 33MF 5% 50V	
R4	1-249-430-11	CARBON 12K 5% 1/4W		C104	1-136-171-00	FILM 0.33MF 10% 200V	
R5	1-249-426-11	CARBON 5.6K 5% 1/4W		C105	1-108-700-11	MYLAR 0.047MF 10% 200V	
R6	1-249-429-11	CARBON 10K 5% 1/4W		C106	1-108-700-11	MYLAR 0.047MF 10% 200V	
R7	1-216-489-11	METAL OXIDE 27K 5% 3W F		C107	1-102-030-00	CERAMIC 330PF 10% 500V	
R8	1-247-802-11	CARBON 62 5% 1/4W		C108	1-136-072-00	FILM 0.0063MF 3% 2KV	
R9	1-249-414-11	CARBON 560 5% 1/4W		C109	1-161-753-00	CERAMIC 470PF 10% 3KV	
R10	1-249-448-11	CARBON 1.2 5% 1/4W F		C110	1-162-114-00	CERAMIC 0.0047MF 10% 2KV	
R11	1-249-448-11	CARBON 1.2 5% 1/4W F		C111	1-136-601-11	FILM 0.01MF 10% 630V	
R12	1-216-351-00	METAL OXIDE 1.5 5% 1W F		C116	1-126-233-11	ELECT 22MF 20% 16V	
R13	1-216-431-11	METAL OXIDE 560 5% 1W F		C117	1-124-910-11	ELECT 47MF 20% 16V	
R14	1-215-866-11	METAL OXIDE 330 5% 1W F		C118	1-102-973-00	CERAMIC 100PF 5% 50V	
R15	1-249-425-11	CARBON 4.7K 5% 1/4W		C119	1-108-796-11	MYLAR 0.0022MF 5% 50V	
R16	1-249-423-11	CARBON 3.3K 5% 1/4W F		C120	1-126-966-11	ELECT 10MF 20% 16V	
R17	1-247-700-11	CARBON 100 5% 1/4W F		C121	1-102-074-00	CERAMIC 0.001MF 10% 50V	
R18	1-215-873-00	METAL OXIDE 4.7K 5% 1W F		C122	1-136-165-00	FILM 0.1MF 5% 50V	
R19	1-249-429-11	CARBON 10K 5% 1/4W		C123	1-136-169-00	FILM 0.22MF 5% 50V	
R20	1-249-429-11	CARBON 10K 5% 1/4W		C124	1-136-111-00	FILM 1MF 5% 200V	
R21	1-249-425-11	CARBON 4.7K 5% 1/4W		C125	1-136-169-00	FILM 0.22MF 5% 50V	
R22	1-249-425-11	CARBON 4.7K 5% 1/4W		C126	1-102-030-00	CERAMIC 330PF 10% 500V	
R23	1-249-425-11	CARBON 4.7K 5% 1/4W		C127	1-130-736-11	FILM 0.01MF 5% 50V	
R24	1-249-417-11	CARBON 1K 5% 1/4W		C128	1-130-994-11	FILM 0.033MF 5% 50V	
R25	1-249-417-11	CARBON 1K 5% 1/4W		C129	1-123-369-00	ELECT 4.7MF 20% 25V	
R26	1-249-421-11	CARBON 2.2K 5% 1/4W		C130	1-102-074-00	CERAMIC 0.001MF 10% 50V	
R27	1-249-421-11	CARBON 2.2K 5% 1/4W		C131	1-136-153-00	FILM 0.01MF 5% 50V	
R28	1-249-405-11	CARBON 100 5% 1/4W		C201	1-108-634-11	MYLAR 0.047MF 10% 100V	
R29	1-249-452-11	CARBON 2.7 5% 1/4W F		C202	1-126-966-11	ELECT 10MF 20% 16V	
R30	1-249-452-11	CARBON 2.7 5% 1/4W F		C203	1-101-006-00	CERAMIC 0.047MF 50V	
R31	1-249-407-11	CARBON 150 5% 1/4W F		C204	1-124-122-11	ELECT 100MF 20% 16V	
R32	1-216-351-00	METAL OXIDE 1.5 5% 1W F		C205	1-126-541-11	ELECT 330MF 20% 16V	
R33	1-215-421-00	METAL 1K 1% 1/4W		C207	1-124-122-11	ELECT 100MF 20% 16V	
R34	1-215-445-00	METAL 10K 1% 1/4W		C209	1-101-006-00	CERAMIC 0.047MF 50V	
R35	1-249-423-11	CARBON 3.3K 5% 1/4W		C210	1-123-382-00	ELECT 3.3MF 20% 50V	
R36	1-216-465-11	METAL OXIDE 27K 5% 2W F		C211	1-163-157-00	FILM 0.022MF 5% 50V	
R37	1-249-401-11	CARBON 47 5% 1/4W		C212	1-101-006-00	CERAMIC 0.047MF 50V	
R38	1-249-425-11	CARBON 4.7K 5% 1/4W		C213	1-124-915-11	ELECT 10MF 20% 50V	
R39	1-215-445-00	METAL 10K 1% 1/4W		C214	1-124-915-11	ELECT 10MF 20% 50V	
R40	1-215-453-00	METAL 22K 1% 1/4W		C215 Δ	1-123-316-51	ELECT 10MF 20% 16V	
R41	1-215-421-00	METAL 1K 1% 1/4W		C216 Δ	1-102-074-61	CERAMIC 0.001MF 10% 50V	
R42	1-247-688-11	CARBON 10 5% 1/4W F		C217	1-126-966-11	ELECT 10MF 20% 16V	
R43	1-247-688-11	CARBON 10 5% 1/4W F		C218	1-126-541-11	ELECT 330MF 20% 16V	
R44	1-215-865-11	METAL OXIDE 220 5% 1W F		C219	1-101-004-00	CERAMIC 0.01MF 50V	
R45	1-247-688-11	CARBON 10 5% 1/4W F		C221	1-136-175-00	FILM 0.068MF 5% 50V	
R51	1-249-411-11	CARBON 330 5% 1/4W		C250	1-126-541-11	ELECT 330MF 20% 16V	
<TRANSFORMER>				<DIODE>			
T1	1-421-504-00	TRANSFORMER, FERRITE (VPT)		D102	8-719-300-80	DIODE RU-1C	
T2	1-407-849-00	TRANSFORMER, D.F		D103	8-719-300-80	DIODE RU-1C	
*****				D104	8-719-300-80	DIODE RU-1C	
*A-1345-598-A PA BOARD, COMPLETE				D105	8-719-300-80	DIODE RU-1C	
*****				D106	8-719-901-19	DIODE V11N	
*1-506-108-41 PIN, CONNECTOR (TERMINAL PIN)				D109	8-719-911-19	DIODE 1SS119	
				D110	8-719-911-19	DIODE 1SS119	
				D111	8-719-109-63	DIODE RD3.0ESB2	
				D201	8-719-911-19	DIODE 1SS119	
				D202	8-719-109-72	DIODE RD3.9ESB2	
				D203	8-719-911-19	DIODE 1SS119	

PA

- The components identified by Δ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
D204	8-719-000-28	THYRISTOR CRO2AM-8		R130	1-249-425-11	CARBON	4.7K 5% 1/4W
D205	8-719-000-28	THYRISTOR CRO2AM-8		R131	1-249-429-11	CARBON	10K 5% 1/4W
D206	8-719-911-19	DIODE ISS119		R132	1-249-428-11	CARBON	8.2K 5% 1/4W
D207	8-719-911-19	DIODE ISS119		R133	1-249-417-11	CARBON	1K 5% 1/4W
D214	8-719-910-25	DIODE HZ12B2L		R134	1-249-437-11	CARBON	47K 5% 1/4W
D215 Δ	8-759-107-91	IC UPC574J-TP		R135	1-249-438-11	CARBON	56K 5% 1/4W
D216 Δ	8-759-107-91	IC UPC574J-TP		R136	1-249-423-11	CARBON	3.3K 5% 1/4W
D217	8-719-911-19	DIODE ISS119		R137	1-215-461-00	METAL	47K 1% 1/4W
D218	8-719-911-19	DIODE ISS119		R138	1-215-440-00	METAL	6.2K 1% 1/4W
D219	8-719-911-19	DIODE ISS119		R139	1-249-424-11	CARBON	3.9K 5% 1/4W
D220	8-719-911-19	DIODE ISS119		R140	1-249-417-11	CARBON	1K 5% 1/4W
D250	8-719-911-19	DIODE ISS119		R141	1-249-429-11	CARBON	10K 5% 1/4W
D251	8-719-911-19	DIODE ISS119		R142	1-249-419-11	CARBON	1.5K 5% 1/4W
				R143	1-215-439-00	METAL	5.6K 1% 1/4W
		<IC>		R144	1-215-421-00	METAL	1K 1% 1/4W
IC1	8-759-100-75	IC UPC1394C		R146	1-249-422-11	CARBON	2.7K 5% 1/4W
IC2	8-759-729-03	IC NJM2903D		R148	1-249-422-11	CARBON	2.7K 5% 1/4W
IC3	8-759-729-03	IC NJM2903D		R150	1-249-417-11	CARBON	1K 5% 1/4W
IC4	8-759-990-82	IC TL082CP		R151	1-249-423-11	CARBON	3.3K 5% 1/4W
		<COIL>		R153	1-249-441-11	CARBON	100K 5% 1/4W
L1	1-459-215-00	COIL (WITH CORE)		R201	1-215-899-11	METAL OXIDE	15K 5% 2W F
				R202	1-215-899-11	METAL OXIDE	15K 5% 2W F
				R203	1-215-899-11	METAL OXIDE	15K 5% 2W F
				R204	1-215-899-11	METAL OXIDE	15K 5% 2W F
		<CONNECTOR>		R205	1-249-429-11	CARBON	10K 5% 1/4W
PA1	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P		R206	1-249-421-11	CARBON	2.2K 5% 1/4W
PA2	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P		R207	1-249-393-11	CARBON	10 5% 1/4W
				R208	1-249-429-11	CARBON	10K 5% 1/4W
				R209	1-249-441-11	CARBON	100K 5% 1/4W
		<TRANSISTOR>		R210	1-249-429-11	CARBON	10K 5% 1/4W
Q101	8-729-105-97	TRANSISTOR 2SA1156-2K		R211	1-249-429-11	CARBON	10K 5% 1/4W
Q102	8-729-201-62	TRANSISTOR 2SC2555-2		R212	1-249-433-11	CARBON	22K 5% 1/4W
Q103	8-729-202-53	TRANSISTOR 2SD1556-LB		R213	1-249-415-11	CARBON	680 5% 1/4W
Q104	8-729-804-48	TRANSISTOR 2SC3675		R214	1-249-429-11	CARBON	10K 5% 1/4W
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE		R220	1-215-455-00	METAL	27K 1% 1/4W
Q107	8-729-119-80	TRANSISTOR 2SC2688-LK		R221	1-215-437-00	METAL	4.7K 1% 1/4W
Q108	8-729-119-80	TRANSISTOR 2SC2688-LK		Δ R222 Δ		METAL	1.6W
Q109	8-729-119-76	TRANSISTOR 2SA1175-HFE		R223	1-215-486-00	METAL	510K 1% 1/4W
Q110	8-729-119-78	TRANSISTOR 2SC2785-HFE		R224	1-215-471-00	METAL	120K 1% 1/4W
Q111	8-729-119-78	TRANSISTOR 2SC2785-HFE		R225	1-215-459-00	METAL	39K 1% 1/4W
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE		R226	1-215-450-00	METAL	16K 1% 1/4W
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE		Δ R227 Δ		METAL	1.6W
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE		Δ R228 Δ		METAL	1.6W
		<RESISTOR>		R229	1-215-469-00	METAL	100K 1% 1/4W
R101	1-216-347-11	METAL OXIDE	0.68 5% 1W F	R230	1-215-471-00	METAL	120K 1% 1/4W
R102	1-247-887-00	CARBON	220K 5% 1/4W	R231	1-249-415-11	CARBON	680 5% 1/4W
R103	1-249-419-11	CARBON	1.5K 5% 1/4W	R232	1-249-429-11	CARBON	10K 5% 1/4W
R104	1-216-464-11	METAL OXIDE	18K 5% 2W F	R237	1-215-455-00	METAL	27K 1% 1/4W
R105	1-216-359-00	METAL OXIDE	6.8 5% 1W F	R238	1-215-437-00	METAL	4.7K 1% 1/4W
R106	1-216-351-00	METAL OXIDE	1.5 5% 1W F	Δ R239 Δ		METAL	1.6W
R107	1-216-371-00	METAL OXIDE	1.5 5% 2W F	R240	1-215-486-00	METAL	510K 1% 1/4W
R108	1-212-998-00	FUSIBLE	470 5% 1/2W F	R241	1-215-471-00	METAL	120K 1% 1/4W
R109	1-215-898-11	METAL OXIDE	10K 5% 2W F	R242	1-249-422-11	CARBON	2.7K 5% 1/4W
R123	1-215-454-00	METAL	24K 1% 1/4W	R243	1-249-422-11	CARBON	2.7K 5% 1/4W
Δ R124 Δ		METAL	1.6W	R245	1-247-887-00	CARBON	220K 5% 1/4W
R125	1-215-452-00	METAL	20K 1% 1/4W	R247	1-249-422-11	CARBON	2.7K 5% 1/4W
Δ R126 Δ		METAL	1.6W	R248	1-249-399-11	CARBON	33 5% 1/4W
R127	1-249-434-11	CARBON	27K 5% 1/4W	R249	1-249-399-11	CARBON	33 5% 1/4W
R128	1-249-427-11	CARBON	6.8K 5% 1/4W	R250	1-249-411-11	CARBON	330 5% 1/4W
R129	1-249-440-11	CARBON	82K 5% 1/4W	R301	1-247-893-11	CARBON	390K 5% 1/4W
				R302	1-247-893-11	CARBON	390K 5% 1/4W
				R303	1-247-893-11	CARBON	390K 5% 1/4W
				R304	1-247-893-11	CARBON	390K 5% 1/4W
				R305	1-247-893-11	CARBON	390K 5% 1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R306	1-247-899-11	CARBON 680K 5% 1/4W		C39	1-161-051-00	CERAMIC 0.01MF 10% 50V	
R307	1-247-899-11	CARBON 680K 5% 1/4W		C40	1-130-871-11	FILM 0.01MF 5% 50V	
R308	1-247-899-11	CARBON 680K 5% 1/4W		C41	1-126-301-11	ELECT 1MF 20% 50V	
R309	1-249-417-11	CARBON 1K 5% 1/4W		C42	1-130-871-11	FILM 0.01MF 5% 50V	
R310	1-249-394-11	CARBON 12 5% 1/4W		C43	1-126-301-11	ELECT 1MF 20% 50V	
R311	1-247-887-00	CARBON 220K 5% 1/4W		C44	1-124-465-00	ELECT 0.47MF 20% 50V	
R312	1-247-881-00	CARBON 120K 5% 1/4W		C45	1-126-157-11	ELECT 10MF 20% 16V	
R313	1-202-719-00	SOLID 1M 10% 1/2W		C46	1-126-157-11	ELECT 10MF 20% 16V	
<VARIABLE RESISTOR>				C47	1-161-051-00	CERAMIC 0.01MF 10% 50V	
RV1	1-237-500-21	RES, ADJ, CERMET 1K		C48	1-161-051-00	CERAMIC 0.01MF 10% 50V	
<TRANSFORMER>				C49	1-161-051-00	CERAMIC 0.01MF 10% 50V	
T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE		C50	1-161-051-00	CERAMIC 0.01MF 10% 50V	
T2	1-437-079-00	TRANSFORMER, HORIZONTAL DRIVE		C51	1-161-051-00	CERAMIC 0.01MF 10% 50V	
T3	1-439-384-11	LOT		C52	1-161-051-00	CERAMIC 0.01MF 10% 50V	
*****				C53	1-161-051-00	CERAMIC 0.01MF 10% 50V	
*A-1345-978-A DA BOARD, COMPLETE				C54	1-126-157-11	ELECT 10MF 20% 16V	
*****				C55	1-126-157-11	ELECT 10MF 20% 16V	
3-618-225-00 NUT, PLATE				C56	1-161-051-00	CERAMIC 0.01MF 10% 50V	
<CAPACITOR>				C57	1-136-474-11	FILM 0.1MF 5% 100V	
C1	1-126-157-11	ELECT 10MF 20% 16V		C58	1-130-871-11	FILM 0.01MF 5% 50V	
C2	1-126-157-11	ELECT 10MF 20% 16V		C59	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C3	1-161-051-00	CERAMIC 0.01MF 10% 50V		C60	1-130-871-11	FILM 0.01MF 5% 50V	
C4	1-101-361-00	CERAMIC 150PF 5% 50V		C61	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C5	1-161-051-00	CERAMIC 0.01MF 10% 50V		C62	1-130-871-11	FILM 0.01MF 5% 50V	
C6	1-161-051-00	CERAMIC 0.01MF 10% 50V		C63	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C7	1-101-361-00	CERAMIC 150PF 5% 50V		C64	1-130-871-11	FILM 0.01MF 5% 50V	
C8	1-102-527-11	CERAMIC 82PF 5% 50V		C65	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C9	1-101-361-00	CERAMIC 150PF 5% 50V		C66	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C10	1-106-359-00	MYLAR 0.0047MF 5% 100V		C67	1-126-163-11	ELECT 4.7MF 20% 25V	
C11	1-130-738-00	FILM 0.015MF 5% 100V		C68	1-101-361-00	CERAMIC 150PF 5% 50V	
C12	1-163-157-00	FILM 0.022MF 5% 50V		C69	1-126-157-11	ELECT 10MF 20% 16V	
C13	1-136-155-00	FILM 0.015MF 5% 50V		C70	1-126-157-11	ELECT 10MF 20% 16V	
C14	1-163-157-00	FILM 0.022MF 5% 50V		C71	1-126-157-11	ELECT 10MF 20% 16V	
C15	1-130-479-00	MYLAR 0.0047MF 5% 50V		C72	1-126-157-11	ELECT 10MF 20% 16V	
C16	1-124-589-11	ELECT 47MF 20% 16V		C73	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C17	1-124-234-00	ELECT 22MF 20% 16V		C74	1-126-157-11	ELECT 10MF 20% 16V	
C18	1-124-234-00	ELECT 22MF 20% 16V		C75	1-126-157-11	ELECT 10MF 20% 16V	
C19	1-161-051-00	CERAMIC 0.01MF 10% 50V		C76	1-136-165-00	FILM 0.1MF 5% 50V	
C20	1-130-871-11	FILM 0.01MF 5% 50V		C77	1-136-165-00	FILM 0.1MF 5% 50V	
C21	1-126-301-11	ELECT 1MF 20% 50V		C78	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C22	1-130-871-11	FILM 0.01MF 5% 50V		C80	1-101-004-00	CERAMIC 0.01MF 50V	
C23	1-126-301-11	ELECT 1MF 20% 50V		C90	1-136-161-00	FILM 0.047MF 5% 50V	
C24	1-126-301-11	ELECT 1MF 20% 50V		C100	1-136-165-00	FILM 0.1MF 5% 50V	
C25	1-126-301-11	ELECT 1MF 20% 50V		C101	1-136-165-00	FILM 0.1MF 5% 50V	
C26	1-161-051-00	CERAMIC 0.01MF 10% 50V		C102	1-102-978-00	CERAMIC 220PF 5% 50V	
C27	1-126-157-11	ELECT 10MF 20% 16V		<DIODE>			
C28	1-126-157-11	ELECT 10MF 20% 16V		D1	8-719-911-19	DIODE 1SS119	
C29	1-126-301-11	ELECT 1MF 20% 50V		D2	8-719-911-19	DIODE 1SS119	
C30	1-161-051-00	CERAMIC 0.01MF 10% 50V		D3	8-719-109-97	DIODE RD6.8ESB2	
C31	1-102-973-00	CERAMIC 100PF 5% 50V		D4	8-719-109-97	DIODE RD6.8ESB2	
C32	1-101-361-00	CERAMIC 150PF 5% 50V		D5	8-719-110-31	DIODE RD12ESB2	
C33	1-130-871-11	FILM 0.01MF 5% 50V		D6	8-719-110-31	DIODE RD12ESB2	
C34	1-126-301-11	ELECT 1MF 20% 50V		D7	8-719-911-19	DIODE 1SS119	
C35	1-161-051-00	CERAMIC 0.01MF 10% 50V		D8	8-719-911-19	DIODE 1SS119	
C36	1-102-824-00	CERAMIC 470PF 5% 50V		D9	8-719-110-03	DIODE RD7.5ESB2	
C38	1-102-824-00	CERAMIC 470PF 5% 50V		D10	8-719-110-03	DIODE RD7.5ESB2	
				D11	8-719-110-41	DIODE RD15ESB2	
				D12	8-719-109-89	DIODE RD5.6ESB2	
				D13	8-719-911-19	DIODE 1SS119	
				D14	8-719-911-19	DIODE 1SS119	
				D15	8-719-911-19	DIODE 1SS119	

DA

REF.NO. PART NO. DESCRIPTION

D18 8-719-911-19 DIODE ISS119
D19 8-719-911-19 DIODE ISS119

<CONNECTOR>

DA1 *1-566-060-11 PIN, CONNECTOR 8P
DA2 *1-566-056-11 PIN, CONNECTOR 4P
DA3 *1-566-062-11 PIN, CONNECTOR 10P
DA4 *1-566-058-11 PIN, CONNECTOR 6P
DA5 *1-566-055-11 PIN, CONNECTOR 3P

DA6 *1-566-058-11 PIN, CONNECTOR 6P
DA7 *1-566-056-11 PIN, CONNECTOR 4P

<IC>

IC1 8-759-984-27 IC MB84027B
IC2 8-759-040-11 IC MC14011BCP
IC3 8-759-000-58 IC MC14093BCP
IC4 8-751-580-00 IC CX-158
IC5 8-759-990-82 IC TL082CP

IC6 8-759-990-82 IC TL082CP
IC7 8-759-014-96 IC MC1496P
IC8 8-759-729-03 IC NJM2903D
IC9 8-759-990-82 IC TL082CP
IC10 8-759-729-03 IC NJM2903D

IC11 8-759-990-82 IC TL082CP
IC12 8-759-014-96 IC MC1496P
IC13 8-759-000-49 IC MC14066BCP
IC14 8-759-000-49 IC MC14066BCP
IC15 8-759-000-49 IC MC14066BCP

IC16 8-759-000-49 IC MC14066BCP
IC17 8-759-145-58 IC UPC4558C
IC18 8-759-909-70 IC CX23025
IC19 8-759-145-58 IC UPC4558C
IC20 8-759-145-58 IC UPC4558C

IC21 8-759-145-58 IC UPC4558C
IC22 8-759-145-58 IC UPC4558C
IC23 8-759-145-58 IC UPC4558C
IC24 8-759-929-62 IC LM7812CT
IC25 8-759-929-65 IC LM7912CT

IC26 8-759-990-82 IC TL082CP

<COIL>

L1 1-407-504-00 INDUCTOR 10MMH

<TRANSISTOR>

Q1 8-729-900-89 TRANSISTOR DTC144ES
Q2 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q3 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q4 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q5 8-729-119-78 TRANSISTOR 2SC2785-HFE

Q6 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q7 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q8 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q9 8-729-800-10 TRANSISTOR 2SC3068
Q10 8-729-119-78 TRANSISTOR 2SC2785-HFE

Q12 8-729-900-89 TRANSISTOR DTC144ES
Q13 8-729-900-89 TRANSISTOR DTC144ES
Q14 8-729-900-89 TRANSISTOR DTC144ES
Q15 8-729-900-89 TRANSISTOR DTC144ES
Q16 8-729-900-89 TRANSISTOR DTC144ES

REMARK

REF.NO. PART NO. DESCRIPTION

REMARK

Q17 8-729-900-89 TRANSISTOR DTC144ES
Q18 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q19 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q20 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q21 8-729-119-78 TRANSISTOR 2SC2785-HFE

Q22 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q23 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q24 8-729-119-78 TRANSISTOR 2SC2785-HFE
Q31 8-729-900-89 TRANSISTOR DTC144ES

<RESISTOR>

R1 1-215-461-00 METAL 47K 1% 1/4W
R2 1-249-417-11 CARBON 1K 5% 1/4W
R3 1-249-430-11 CARBON 12K 5% 1/4W
R4 1-249-417-11 CARBON 1K 5% 1/4W
R5 1-249-422-11 CARBON 2.7K 5% 1/4W

R6 1-247-840-00 CARBON 2.4K 5% 1/4W
R7 1-215-462-00 METAL 51K 1% 1/4W
R8 1-249-417-11 CARBON 1K 5% 1/4W
R9 1-249-417-11 CARBON 1K 5% 1/4W
R10 1-249-423-11 CARBON 3.3K 5% 1/4W

R11 1-249-419-11 CARBON 1.5K 5% 1/4W
R12 1-249-429-11 CARBON 10K 5% 1/4W
R13 1-249-424-11 CARBON 3.9K 5% 1/4W
R14 1-249-419-11 CARBON 1.5K 5% 1/4W
R15 1-249-410-11 CARBON 270 5% 1/4W

R16 1-249-417-11 CARBON 1K 5% 1/4W
R17 1-215-427-00 METAL 1.8K 1% 1/4W
R18 1-215-435-00 METAL 3.9K 1% 1/4W
R19 1-215-443-00 METAL 8.2K 1% 1/4W
R20 1-249-400-11 CARBON 39 5% 1/4W

R21 1-249-429-11 CARBON 10K 5% 1/4W
R22 1-215-445-00 METAL 10K 1% 1/4W
R23 1-249-429-11 CARBON 10K 5% 1/4W
R24 1-249-427-11 CARBON 6.8K 5% 1/4W
R25 1-249-393-11 CARBON 10 5% 1/4W

R26 1-215-439-00 METAL 5.6K 1% 1/4W
R27 1-249-429-11 CARBON 10K 5% 1/4W
R28 1-215-421-00 METAL 1K 1% 1/4W
R29 1-215-458-00 METAL 36K 1% 1/4W
R30 1-249-429-11 CARBON 10K 5% 1/4W

R31 1-249-427-11 CARBON 6.8K 5% 1/4W
R32 1-249-393-11 CARBON 10 5% 1/4W
R33 1-249-427-11 CARBON 6.8K 5% 1/4W
R34 1-249-424-11 CARBON 3.9K 5% 1/4W
R35 1-247-800-11 CARBON 51 5% 1/4W

R36 1-249-417-11 CARBON 1K 5% 1/4W
R37 1-249-417-11 CARBON 1K 5% 1/4W
R38 1-249-417-11 CARBON 1K 5% 1/4W
R39 1-249-417-11 CARBON 1K 5% 1/4W
R40 1-249-417-11 CARBON 1K 5% 1/4W

R41 1-247-800-11 CARBON 51 5% 1/4W
R42 1-249-430-11 CARBON 12K 5% 1/4W
R43 1-249-419-11 CARBON 1.5K 5% 1/4W
R44 1-249-424-11 CARBON 3.9K 5% 1/4W
R45 1-249-429-11 CARBON 10K 5% 1/4W

R46 1-249-429-11 CARBON 10K 5% 1/4W
R47 1-249-431-11 CARBON 15K 5% 1/4W
R48 1-249-429-11 CARBON 10K 5% 1/4W
R49 1-249-429-11 CARBON 10K 5% 1/4W
R50 1-249-429-11 CARBON 10K 5% 1/4W

R51 1-249-429-11 CARBON 10K 5% 1/4W
R52 1-249-417-11 CARBON 1K 5% 1/4W

ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R53	1-247-903-00	CARBON	1M 5% 1/4W	R127	1-249-417-11	CARBON	1K 5% 1/4W
R54	1-249-421-11	CARBON	2.2K 5% 1/4W	R128	1-249-417-11	CARBON	1K 5% 1/4W
R55	1-249-417-11	CARBON	1K 5% 1/4W	R129	1-249-405-11	CARBON	100 5% 1/4W
R56	1-249-435-11	CARBON	33K 5% 1/4W	R130	1-249-429-11	CARBON	10K 5% 1/4W
R57	1-249-429-11	CARBON	10K 5% 1/4W	R131	1-215-445-00	METAL	10K 1% 1/4W
R58	1-249-423-11	CARBON	3.3K 5% 1/4W	R132	1-215-445-00	METAL	10K 1% 1/4W
R59	1-249-429-11	CARBON	10K 5% 1/4W	R133	1-215-461-00	METAL	47K 1% 1/4W
R60	1-215-445-00	METAL	10K 1% 1/4W	R134	1-215-447-00	METAL	12K 1% 1/4W
R61	1-249-429-11	CARBON	10K 5% 1/4W	R135	1-249-427-11	CARBON	6.8K 5% 1/4W
R62	1-249-427-11	CARBON	6.8K 5% 1/4W	R136	1-249-429-11	CARBON	10K 5% 1/4W
R63	1-249-393-11	CARBON	10 5% 1/4W	R137	1-249-405-11	CARBON	100 5% 1/4W
R64	1-249-429-11	CARBON	10K 5% 1/4W	R138	1-249-417-11	CARBON	1K 5% 1/4W
R65	1-249-433-11	CARBON	22K 5% 1/4W	R139	1-249-417-11	CARBON	1K 5% 1/4W
R66	1-249-433-11	CARBON	22K 5% 1/4W	R140	1-215-421-00	METAL	1K 1% 1/4W
R67	1-249-429-11	CARBON	10K 5% 1/4W	R141	1-249-429-11	CARBON	10K 5% 1/4W
R68	1-247-903-00	CARBON	1M 5% 1/4W	R142	1-215-457-00	METAL	33K 1% 1/4W
R69	1-249-421-11	CARBON	2.2K 5% 1/4W	R143	1-215-457-00	METAL	33K 1% 1/4W
R70	1-249-435-11	CARBON	33K 5% 1/4W	R144	1-249-429-11	CARBON	10K 5% 1/4W
R71	1-249-429-11	CARBON	10K 5% 1/4W	R145	1-215-481-00	METAL	330K 1% 1/4W
R72	1-249-423-11	CARBON	3.3K 5% 1/4W	R146	1-249-429-11	CARBON	10K 5% 1/4W
R74	1-249-429-11	CARBON	10K 5% 1/4W	R147	1-249-433-11	CARBON	22K 5% 1/4W
R76	1-249-433-11	CARBON	22K 5% 1/4W	R148	1-249-405-11	CARBON	100 5% 1/4W
R77	1-249-439-11	CARBON	68K 5% 1/4W	R149	1-215-421-00	METAL	1K 1% 1/4W
R79	1-249-421-11	CARBON	2.2K 5% 1/4W	R150	1-215-457-00	METAL	33K 1% 1/4W
R80	1-249-435-11	CARBON	33K 5% 1/4W	R151	1-215-457-00	METAL	33K 1% 1/4W
R81	1-249-429-11	CARBON	10K 5% 1/4W	R152	1-215-481-00	METAL	330K 1% 1/4W
R82	1-249-423-11	CARBON	3.3K 5% 1/4W	R153	1-215-431-00	METAL	2.7K 1% 1/4W
R83	1-249-429-11	CARBON	10K 5% 1/4W	R154	1-215-413-00	METAL	470 1% 1/4W
R84	1-215-445-00	METAL	10K 1% 1/4W	R155	1-249-429-11	CARBON	10K 5% 1/4W
R85	1-249-427-11	CARBON	6.8K 5% 1/4W	R156	1-249-429-11	CARBON	10K 5% 1/4W
R86	1-249-429-11	CARBON	10K 5% 1/4W	R157	1-249-433-11	CARBON	22K 5% 1/4W
R87	1-249-393-11	CARBON	10 5% 1/4W	R158	1-249-405-11	CARBON	100 5% 1/4W
R88	1-249-429-11	CARBON	10K 5% 1/4W	R159	1-249-429-11	CARBON	10K 5% 1/4W
R89	1-249-429-11	CARBON	10K 5% 1/4W	R160	1-247-897-11	CARBON	560K 5% 1/4W
R90	1-249-417-11	CARBON	1K 5% 1/4W	R161	1-215-455-00	METAL	27K 1% 1/4W
R91	1-249-429-11	CARBON	10K 5% 1/4W	R162	1-215-445-00	METAL	10K 1% 1/4W
R92	1-249-435-11	CARBON	33K 5% 1/4W	R163	1-215-445-00	METAL	10K 1% 1/4W
R93	1-249-393-11	CARBON	10 5% 1/4W	R164	1-215-461-00	METAL	47K 1% 1/4W
R94	1-247-848-11	CARBON	5.1K 5% 1/4W	R165	1-215-461-00	METAL	47K 1% 1/4W
R95	1-249-417-11	CARBON	1K 5% 1/4W	R166	1-215-485-00	METAL	470K 1% 1/4W
R96	1-249-429-11	CARBON	10K 5% 1/4W	R167	1-249-429-11	CARBON	10K 5% 1/4W
R97	1-249-433-11	CARBON	22K 5% 1/4W	R168	1-249-429-11	CARBON	10K 5% 1/4W
R98	1-249-409-11	CARBON	220 5% 1/4W	R169	1-249-433-11	CARBON	22K 5% 1/4W
R99	1-249-405-11	CARBON	100 5% 1/4W	R170	1-249-405-11	CARBON	100 5% 1/4W
R100	1-249-417-11	CARBON	1K 5% 1/4W	R171	1-249-429-11	CARBON	10K 5% 1/4W
R101	1-249-405-11	CARBON	100 5% 1/4W	R172	1-215-445-00	METAL	10K 1% 1/4W
R102	1-249-430-11	CARBON	12K 5% 1/4W	R173	1-215-445-00	METAL	10K 1% 1/4W
R103	1-249-424-11	CARBON	3.9K 5% 1/4W	R174	1-215-457-00	METAL	33K 1% 1/4W
R104	1-247-800-11	CARBON	51 5% 1/4W	R175	1-215-457-00	METAL	33K 1% 1/4W
R105	1-249-417-11	CARBON	1K 5% 1/4W	R176	1-215-481-00	METAL	330K 1% 1/4W
R106	1-249-417-11	CARBON	1K 5% 1/4W	R177	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-424-11	CARBON	3.9K 5% 1/4W	R178	1-247-903-00	CARBON	1M 5% 1/4W
R109	1-249-437-11	CARBON	47K 5% 1/4W	R179	1-249-429-11	CARBON	10K 5% 1/4W
R110	1-249-430-11	CARBON	12K 5% 1/4W	R180	1-249-433-11	CARBON	22K 5% 1/4W
R111	1-249-437-11	CARBON	47K 5% 1/4W	R181	1-249-405-11	CARBON	100 5% 1/4W
R112	1-249-426-11	CARBON	5.6K 5% 1/4W	R182	1-215-451-00	METAL	18K 1% 1/4W
R113	1-249-430-11	CARBON	12K 5% 1/4W	R183	1-249-429-11	CARBON	10K 5% 1/4W
R114	1-249-437-11	CARBON	47K 5% 1/4W	R184	1-215-477-00	METAL	220K 1% 1/4W
R115	1-247-830-11	CARBON	910 5% 1/4W	R185	1-215-445-00	METAL	10K 1% 1/4W
R116	1-247-830-11	CARBON	910 5% 1/4W	R186	1-215-445-00	METAL	10K 1% 1/4W
R123	1-215-445-00	METAL	10K 1% 1/4W	R189	1-215-409-00	METAL	330 1% 1/4W
R124	1-215-433-00	METAL	3.3K 1% 1/4W	R190	1-215-432-00	METAL	3K 1% 1/4W
R125	1-215-443-00	METAL	8.2K 1% 1/4W	R191	1-215-409-00	METAL	330 1% 1/4W
R126	1-215-437-00	METAL	4.7K 1% 1/4W				

DA DB

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R192	1-215-433-00	METAL	3.3K 1% 1/4W	*****			
R193	1-249-433-11	CARBON	22K 5% 1/4W				
R194	1-249-417-11	CARBON	1K 5% 1/4W				
R195	1-249-417-11	CARBON	1K 5% 1/4W	*A-1345-979-A	DB BOARD, COMPLETE	*****	
R196	1-249-429-11	CARBON	10K 5% 1/4W				
R197	1-249-429-11	CARBON	10K 5% 1/4W	3-618-225-00	NUT, PLATE		
R198	1-215-475-00	METAL	180K 1% 1/4W				
R200	1-215-445-00	METAL	10K 1% 1/4W	<CAPACITOR>			
R201	1-249-429-11	CARBON	10K 5% 1/4W	C3	1-102-963-00	CERAMIC	33PF 5% 50V
R202	1-249-429-11	CARBON	10K 5% 1/4W	C4	1-136-165-00	FILM	0.1MF 5% 50V
R203	1-249-429-11	CARBON	10K 5% 1/4W	C5	1-136-161-00	FILM	0.047MF 5% 50V
R204	1-249-429-11	CARBON	10K 5% 1/4W	C6	1-161-051-00	CERAMIC	0.01MF 10% 50V
R205	1-249-437-11	CARBON	47K 5% 1/4W	C7	1-124-589-11	ELECT	47MF 20% 16V
R206	1-249-417-11	CARBON	1K 5% 1/4W	C8	1-136-153-00	FILM	0.01MF 5% 50V
R207	1-249-433-11	CARBON	22K 5% 1/4W	C9	1-136-153-00	FILM	0.01MF 5% 50V
R208	1-249-437-11	CARBON	47K 5% 1/4W	C10	1-136-161-00	FILM	0.047MF 5% 50V
R209	1-249-429-11	CARBON	10K 5% 1/4W	C11	1-102-973-00	CERAMIC	100PF 5% 50V
R210	1-249-429-11	CARBON	10K 5% 1/4W	C12	1-136-165-00	FILM	0.1MF 5% 50V
R211	1-249-429-11	CARBON	10K 5% 1/4W	C13	1-136-161-00	FILM	0.047MF 5% 50V
R220	1-249-439-11	CARBON	68K 5% 1/4W	C14	1-102-074-00	CERAMIC	0.001MF 10% 50V
R221	1-249-428-11	CARBON	8.2K 5% 1/4W	C15	1-136-165-00	FILM	0.1MF 5% 50V
R223	1-249-433-11	CARBON	22K 5% 1/4W	C16	1-102-074-00	CERAMIC	0.001MF 10% 50V
R224	1-249-433-11	CARBON	22K 5% 1/4W	C17	1-136-153-00	FILM	0.01MF 5% 50V
R290	1-215-443-00	METAL	8.2K 1% 1/4W	C18	1-161-051-00	CERAMIC	0.01MF 10% 50V
R301	1-215-440-00	METAL	6.2K 1% 1/4W	C19	1-124-589-11	ELECT	47MF 20% 16V
R302	1-215-445-00	METAL	10K 1% 1/4W	C20	1-124-589-11	ELECT	47MF 20% 16V
R303	1-249-419-11	CARBON	1.5K 5% 1/4W	C21	1-161-051-00	CERAMIC	0.01MF 10% 50V
<VARIABLE RESISTOR>				C22	1-124-589-11	ELECT	47MF 20% 16V
RV1	1-237-521-21	RES, ADJ, CERMET	100K	C23	1-163-157-00	FILM	0.022MF 5% 50V
RV2	1-237-522-21	RES, ADJ, CERMET	200K	C24	1-136-165-00	FILM	0.1MF 5% 50V
RV3	1-237-521-21	RES, ADJ, CERMET	100K	C25	1-136-153-00	FILM	0.01MF 5% 50V
RV4	1-237-519-21	RES, ADJ, CERMET	20K	C26	1-136-161-00	FILM	0.047MF 5% 50V
RV5	1-237-519-21	RES, ADJ, CERMET	20K	C27	1-163-157-00	FILM	0.022MF 5% 50V
RV6	1-237-518-21	RES, ADJ, CERMET	10K	C28	1-136-165-00	FILM	0.1MF 5% 50V
RV7	1-237-518-21	RES, ADJ, CERMET	10K	C29	1-136-153-00	FILM	0.01MF 5% 50V
RV10	1-237-519-21	RES, ADJ, CERMET	20K	C30	1-136-161-00	FILM	0.047MF 5% 50V
RV11	1-237-519-21	RES, ADJ, CERMET	20K	C31	1-124-589-11	ELECT	47MF 20% 16V
RV12	1-237-519-21	RES, ADJ, CERMET	20K	C32	1-161-051-00	CERAMIC	0.01MF 10% 50V
RV13	1-237-519-21	RES, ADJ, CERMET	20K	C33	1-136-153-00	FILM	0.01MF 5% 50V
RV14	1-237-519-21	RES, ADJ, CERMET	20K	C34	1-136-161-00	FILM	0.047MF 5% 50V
RV15	1-237-519-21	RES, ADJ, CERMET	20K	C35	1-102-973-00	CERAMIC	100PF 5% 50V
RV16	1-237-519-21	RES, ADJ, CERMET	20K	C36	1-136-165-00	FILM	0.1MF 5% 50V
RV17	1-237-517-21	RES, ADJ, CERMET	5K	C37	1-136-161-00	FILM	0.047MF 5% 50V
RV18	1-237-517-21	RES, ADJ, CERMET	5K	C38	1-102-074-00	CERAMIC	0.001MF 10% 50V
RV19	1-237-519-21	RES, ADJ, CERMET	20K	C39	1-136-165-00	FILM	0.1MF 5% 50V
RV20	1-237-519-21	RES, ADJ, CERMET	20K	C40	1-102-074-00	CERAMIC	0.001MF 10% 50V
RV21	1-237-519-21	RES, ADJ, CERMET	20K	C41	1-136-153-00	FILM	0.01MF 5% 50V
RV22	1-237-516-21	RES, ADJ, CERMET	2K	C42	1-161-051-00	CERAMIC	0.01MF 10% 50V
RV23	1-237-516-21	RES, ADJ, CERMET	2K	C43	1-124-589-11	ELECT	47MF 20% 16V
RV24	1-237-516-21	RES, ADJ, CERMET	2K	C44	1-124-589-11	ELECT	47MF 20% 16V
RV25	1-237-519-21	RES, ADJ, CERMET	20K	C45	1-102-074-00	CERAMIC	0.001MF 10% 50V
RV26	1-237-519-21	RES, ADJ, CERMET	20K	C46	1-136-161-00	FILM	0.047MF 5% 50V
RV27	1-237-519-21	RES, ADJ, CERMET	20K	C47	1-102-973-00	CERAMIC	100PF 5% 50V
RV28	1-237-519-21	RES, ADJ, CERMET	20K	C48	1-136-165-00	FILM	0.1MF 5% 50V
RV29	1-237-519-21	RES, ADJ, CERMET	20K	C49	1-136-161-00	FILM	0.047MF 5% 50V
RV30	1-237-519-21	RES, ADJ, CERMET	20K	C50	1-102-074-00	CERAMIC	0.001MF 10% 50V
RV31	1-237-519-21	RES, ADJ, CERMET	20K	C51	1-136-161-00	FILM	0.047MF 5% 50V
RV32	1-237-516-21	RES, ADJ, CERMET	2K	C52	1-102-074-00	CERAMIC	0.001MF 10% 50V
<SWITCH>				C53	1-101-880-00	CERAMIC	47PF 5% 50V
S1	1-571-908-11	SWITCH, SLIDE		C54	1-161-051-00	CERAMIC	0.01MF 10% 50V
				C55	1-124-589-11	ELECT	47MF 20% 16V
				C56	1-124-589-11	ELECT	47MF 20% 16V
				C57	1-102-074-00	CERAMIC	0.001MF 10% 50V

1. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C58	1-136-161-00	FILM	0.047MF	5%	50V		
C59	1-102-973-00	CERAMIC	100PF	5%	50V		
C60	1-136-165-00	FILM	0.1MF	5%	50V		
C61	1-136-161-00	FILM	0.047MF	5%	50V		
C62	1-102-074-00	CERAMIC	0.001MF	10%	50V		
C63	1-136-161-00	FILM	0.047MF	5%	50V		
C64	1-102-074-00	CERAMIC	0.001MF	10%	50V		
C65	1-101-880-00	CERAMIC	47PF	5%	50V		
C66	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C67	1-124-589-11	ELECT	47MF	20%	16V		
C68	1-124-589-11	ELECT	47MF	20%	16V		
C69	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C70	1-102-074-00	CERAMIC	0.001MF	10%	50V		
C71	1-124-589-11	ELECT	47MF	20%	16V		
C72	1-126-096-11	ELECT	10MF	20%	25V		
C73	1-126-096-11	ELECT	10MF	20%	25V		
C74	1-126-096-11	ELECT	10MF	20%	25V		
C75	1-126-096-11	ELECT	10MF	20%	25V		
C76	1-126-096-11	ELECT	10MF	20%	25V		
C77	1-126-096-11	ELECT	10MF	20%	25V		
C78	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C81	1-102-121-00	CERAMIC	0.0022MF	10%	50V		
C83	1-136-167-00	FILM	0.15MF	5%	50V		
C85	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C86	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C87	1-101-361-00	CERAMIC	150PF	5%	50V		
C88	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C89	1-161-051-00	CERAMIC	0.01MF	10%	50V		
C90	1-161-051-00	CERAMIC	0.01MF	10%	50V		
<DIODE>							
D2	8-719-109-97	DIODE RD6.8ESB2					
D3	8-719-911-19	DIODE 1SS119					
D4	8-719-911-19	DIODE 1SS119					
D5	8-719-911-19	DIODE 1SS119					
D6	8-719-110-03	DIODE RD7.5ESB2					
D7	8-719-110-03	DIODE RD7.5ESB2					
D8	8-719-109-97	DIODE RD6.8ESB2					
D10	8-719-911-19	DIODE 1SS119					
<CONNECTOR>							
DB1	*1-566-049-11	PIN, CONNECTOR 10P					
DB2	*1-566-041-11	PIN, CONNECTOR 2P					
DB3	*1-566-042-11	PIN, CONNECTOR 3P					
DB4	*1-566-042-11	PIN, CONNECTOR 3P					
DB5	*1-566-042-11	PIN, CONNECTOR 3P					
<IC>							
IC1	8-759-145-58	IC UPC4558C					
IC2	8-759-145-58	IC UPC4558C					
IC3	8-759-145-58	IC UPC4558C					
IC4	8-759-145-58	IC UPC4558C					
IC5	8-759-145-58	IC UPC4558C					
IC6	8-759-145-58	IC UPC4558C					
IC7	8-759-145-58	IC UPC4558C					
IC8	8-759-145-58	IC UPC4558C					
IC9	8-759-140-53	IC UPD4053BC					
IC10	8-759-140-53	IC UPD4053BC					
IC11	8-759-140-53	IC UPD4053BC					
IC13	8-759-701-79	IC NJM7812FA					
IC14	8-759-929-65	IC LM7912CT					
IC15	8-759-345-38	IC HD14538BP					
IC16	8-759-729-03	IC NJM2903D					
IC17	8-759-140-53	IC UPD4053BC					
<COIL>							
L1	1-408-238-00	INDUCTOR			3.9MMH		
L2	1-408-238-00	INDUCTOR			3.9MMH		
L3	1-408-238-00	INDUCTOR			3.9MMH		
L4	1-408-238-00	INDUCTOR			3.9MMH		
<TRANSISTOR>							
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q4	8-729-900-36	TRANSISTOR DTC124ES					
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q7	8-729-201-05	TRANSISTOR 2SC2878-B					
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q9	8-729-106-07	TRANSISTOR 2SK514-H					
Q10	8-729-900-36	TRANSISTOR DTC124ES					
Q11	8-729-201-05	TRANSISTOR 2SC2878-B					
Q12	8-729-201-05	TRANSISTOR 2SC2878-B					
Q13	8-729-106-07	TRANSISTOR 2SK514-H					
Q14	8-729-900-36	TRANSISTOR DTC124ES					
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q16	8-729-106-07	TRANSISTOR 2SK514-H					
Q17	8-729-900-36	TRANSISTOR DTC124ES					
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q19	8-729-201-05	TRANSISTOR 2SC2878-B					
Q20	8-729-201-05	TRANSISTOR 2SC2878-B					
Q21	8-729-201-05	TRANSISTOR 2SC2878-B					
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q24	8-729-106-07	TRANSISTOR 2SK514-H					
Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q28	8-729-106-07	TRANSISTOR 2SK514-H					
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q31	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q32	8-729-106-07	TRANSISTOR 2SK514-H					
Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q34	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q35	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q37	8-729-900-36	TRANSISTOR DTC124ES					
Q38	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q41	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q42	8-729-900-89	TRANSISTOR DTC144ES					
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q44	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q45	8-729-900-89	TRANSISTOR DTC144ES					
Q46	8-729-900-89	TRANSISTOR DTC144ES					
Q47	8-729-900-65	TRANSISTOR DTA144ES					
Q48	8-729-900-89	TRANSISTOR DTC144ES					
Q49	8-729-900-89	TRANSISTOR DTC144ES					
Q101	8-729-900-89	TRANSISTOR DTC144ES					
<RESISTOR>							

DB

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R3	1-249-423-11	CARBON	3.3K 5% 1/4W	R69	1-249-435-11	CARBON	33K 5% 1/4W
R4	1-249-441-11	CARBON	100K 5% 1/4W	R70	1-249-421-11	CARBON	2.2K 5% 1/4W
R5	1-249-429-11	CARBON	10K 5% 1/4W	R71	1-249-417-11	CARBON	1K 5% 1/4W
R6	1-249-420-11	CARBON	1.8K 5% 1/4W	R72	1-249-433-11	CARBON	22K 5% 1/4W
R7	1-249-429-11	CARBON	10K 5% 1/4W	R73	1-249-425-11	CARBON	4.7K 5% 1/4W
R8	1-249-429-11	CARBON	10K 5% 1/4W	R74	1-247-903-00	CARBON	1M 5% 1/4W
R9	1-249-425-11	CARBON	4.7K 5% 1/4W	R75	1-249-429-11	CARBON	10K 5% 1/4W
R10	1-215-467-00	METAL	82K 1% 1/4W	R76	1-249-429-11	CARBON	10K 5% 1/4W
R11	1-215-439-00	METAL	5.6K 1% 1/4W	R77	1-249-429-11	CARBON	10K 5% 1/4W
R12	1-215-477-00	METAL	220K 1% 1/4W	R78	1-215-469-00	METAL	100K 1% 1/4W
R13	1-249-429-11	CARBON	10K 5% 1/4W	R79	1-249-405-11	CARBON	100 5% 1/4W
R14	1-249-433-11	CARBON	22K 5% 1/4W	R80	1-249-417-11	CARBON	1K 5% 1/4W
R15	1-249-433-11	CARBON	22K 5% 1/4W	R81	1-249-433-11	CARBON	22K 5% 1/4W
R16	1-249-441-11	CARBON	100K 5% 1/4W	R82	1-249-425-11	CARBON	4.7K 5% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R83	1-249-435-11	CARBON	33K 5% 1/4W
R18	1-215-477-00	METAL	220K 1% 1/4W	R84	1-249-421-11	CARBON	2.2K 5% 1/4W
R19	1-249-429-11	CARBON	10K 5% 1/4W	R85	1-249-417-11	CARBON	1K 5% 1/4W
R20	1-249-433-11	CARBON	22K 5% 1/4W	R86	1-249-433-11	CARBON	22K 5% 1/4W
R21	1-249-433-11	CARBON	22K 5% 1/4W	R87	1-249-425-11	CARBON	4.7K 5% 1/4W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R88	1-247-895-00	CARBON	470K 5% 1/4W
R23	1-249-429-11	CARBON	10K 5% 1/4W	R89	1-247-895-00	CARBON	470K 5% 1/4W
R24	1-215-457-00	METAL	33K 1% 1/4W	R90	1-249-429-11	CARBON	10K 5% 1/4W
R25	1-249-405-11	CARBON	100 5% 1/4W	R91	1-249-429-11	CARBON	10K 5% 1/4W
R26	1-249-417-11	CARBON	1K 5% 1/4W	R92	1-215-469-00	METAL	100K 1% 1/4W
R27	1-249-433-11	CARBON	22K 5% 1/4W	R93	1-249-405-11	CARBON	100 5% 1/4W
R28	1-249-425-11	CARBON	4.7K 5% 1/4W	R94	1-249-417-11	CARBON	1K 5% 1/4W
R29	1-249-435-11	CARBON	33K 5% 1/4W	R95	1-249-433-11	CARBON	22K 5% 1/4W
R30	1-249-421-11	CARBON	2.2K 5% 1/4W	R96	1-249-425-11	CARBON	4.7K 5% 1/4W
R31	1-249-417-11	CARBON	1K 5% 1/4W	R97	1-249-435-11	CARBON	33K 5% 1/4W
R32	1-249-433-11	CARBON	22K 5% 1/4W	R98	1-249-421-11	CARBON	2.2K 5% 1/4W
R33	1-249-425-11	CARBON	4.7K 5% 1/4W	R99	1-249-417-11	CARBON	1K 5% 1/4W
R34	1-247-903-00	CARBON	1M 5% 1/4W	R100	1-249-433-11	CARBON	22K 5% 1/4W
R35	1-249-429-11	CARBON	10K 5% 1/4W	R101	1-249-425-11	CARBON	4.7K 5% 1/4W
R36	1-249-429-11	CARBON	10K 5% 1/4W	R102	1-247-895-00	CARBON	470K 5% 1/4W
R37	1-249-429-11	CARBON	10K 5% 1/4W	R103	1-247-895-00	CARBON	470K 5% 1/4W
R38	1-215-445-00	METAL	10K 1% 1/4W	R104	1-249-429-11	CARBON	10K 5% 1/4W
R39	1-215-445-00	METAL	10K 1% 1/4W	R105	1-249-429-11	CARBON	10K 5% 1/4W
R40	1-249-429-11	CARBON	10K 5% 1/4W	R106	1-215-397-00	METAL	100 1% 1/4W
R42	1-249-441-11	CARBON	100K 5% 1/4W	R107	1-249-393-11	CARBON	10 5% 1/4W
R43	1-249-405-11	CARBON	100 5% 1/4W	R108	1-249-393-11	CARBON	10 5% 1/4W
R44	1-249-417-11	CARBON	1K 5% 1/4W	R109	1-249-429-11	CARBON	10K 5% 1/4W
R45	1-215-445-00	METAL	10K 1% 1/4W	R110	1-215-437-00	METAL	4.7K 1% 1/4W
R46	1-215-445-00	METAL	10K 1% 1/4W	R111	1-249-421-11	CARBON	2.2K 5% 1/4W
R47	1-249-429-11	CARBON	10K 5% 1/4W	R112	1-249-405-11	CARBON	100 5% 1/4W
R48	1-247-895-00	CARBON	470K 5% 1/4W	R113	1-249-429-11	CARBON	10K 5% 1/4W
R49	1-215-451-00	METAL	18K 1% 1/4W	R114	1-215-441-00	METAL	6.8K 1% 1/4W
R50	1-215-451-00	METAL	18K 1% 1/4W	R115	1-215-469-00	METAL	100K 1% 1/4W
R51	1-249-429-11	CARBON	10K 5% 1/4W	R116	1-249-421-11	CARBON	2.2K 5% 1/4W
R52	1-215-451-00	METAL	18K 1% 1/4W	R117	1-249-405-11	CARBON	100 5% 1/4W
R53	1-247-895-00	CARBON	470K 5% 1/4W	R118	1-249-405-11	CARBON	100 5% 1/4W
R54	1-215-451-00	METAL	18K 1% 1/4W	R120	1-215-421-00	METAL	1K 1% 1/4W
R55	1-249-429-11	CARBON	10K 5% 1/4W	R121	1-249-425-11	CARBON	4.7K 5% 1/4W
R57	1-249-405-11	CARBON	100 5% 1/4W	R122	1-215-461-00	METAL	47K 1% 1/4W
R58	1-249-405-11	CARBON	100 5% 1/4W	R123	1-215-437-00	METAL	4.7K 1% 1/4W
R59	1-249-421-11	CARBON	2.2K 5% 1/4W	R124	1-215-437-00	METAL	4.7K 1% 1/4W
R60	1-215-445-00	METAL	10K 1% 1/4W	R125	1-215-469-00	METAL	100K 1% 1/4W
R61	1-249-429-11	CARBON	10K 5% 1/4W	R126	1-249-435-11	CARBON	33K 5% 1/4W
R62	1-215-445-00	METAL	10K 1% 1/4W	R128	1-202-731-00	SOLID	10M 5% 1/2W
R63	1-215-457-00	METAL	33K 1% 1/4W	R129	1-215-479-00	METAL	270K 1% 1/4W
R64	1-249-429-11	CARBON	10K 5% 1/4W	R130	1-247-830-11	CARBON	910 5% 1/4W
R65	1-249-405-11	CARBON	100 5% 1/4W	R132	1-247-830-11	CARBON	910 5% 1/4W
R66	1-249-417-11	CARBON	1K 5% 1/4W	R134	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R67	1-249-433-11	CARBON	22K 5% 1/4W	R135	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R68	1-249-425-11	CARBON	4.7K 5% 1/4W				

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV55	1-228-459-00	RES, ADJ, CERMET 10K		D9	8-719-928-08	DIODE BRD28-08S	
RV56	1-228-459-00	RES, ADJ, CERMET 10K		D10	8-719-300-76	DIODE RH-1A	
RV57	1-228-459-00	RES, ADJ, CERMET 10K		D11	8-719-300-76	DIODE RH-1A	
RV58	1-228-459-00	RES, ADJ, CERMET 10K		D12	8-719-300-76	DIODE RH-1A	
RV59	1-228-459-00	RES, ADJ, CERMET 10K					
RV60	1-228-459-00	RES, ADJ, CERMET 10K		D13	8-719-109-75	DIODE RD4.3ESB2	
RV61	1-228-462-00	RES, ADJ, CERMET 100K		D14	8-719-109-75	DIODE RD4.3ESB2	
*****				D15	8-719-911-19	DIODE 1SS119	
*****				D16	8-719-911-19	DIODE 1SS119	
*****				<CONNECTOR>			
*A-1346-028-A	EA BOARD, COMPLETE	*****		EA1	*1-568-536-11	PLUG (MINIATURE DY) 6P	
*4-347-706-00	HEAT SINK (TR)			<IC>			
*4-373-965-01	INSULATOR (SMALL)			IC1	8-759-100-75	IC UPC1394C	
<CAPACITOR>				IC2	8-759-145-58	IC UPC4558C	
C1	1-101-810-00	CERAMIC 100PF	5% 500V	<COIL>			
C2	1-124-917-11	ELECT 33MF	20% 25V	L1	1-459-433-00	COIL (WITH CORE)	
C3	1-124-917-11	ELECT 33MF	20% 25V	L2	1-459-433-00	COIL (WITH CORE)	
C4	1-124-046-00	ELECT 10MF	160V	L3	1-459-433-00	COIL (WITH CORE)	
C5	1-124-046-00	ELECT 10MF	160V	L4	1-459-111-00	COIL, DRAM CORE (CD1)	
				L5	1-459-111-00	COIL, DRAM CORE (CD1)	
C6	1-101-361-00	CERAMIC 150PF	5% 50V	<TRANSISTOR>			
C7	1-124-046-00	ELECT 10MF	160V	Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C8	1-136-337-11	FILM 3.3MF	10% 100V	Q2	8-729-697-92	TRANSISTOR 2SA979-G	
C12	1-102-121-00	CERAMIC 0.0022MF	10% 50V	Q3	8-729-140-50	TRANSISTOR 2SC3209LK	
C13	1-136-165-00	FILM 0.1MF	5% 50V	Q4	8-729-303-61	TRANSISTOR 2SC3851-G	
				Q5	8-729-304-07	TRANSISTOR 2SA1488-Y	
C14	1-130-728-00	FILM 0.0022MF	5% 50V	Q10	8-729-119-80	TRANSISTOR 2SC2688-LK	
C15	1-102-973-00	CERAMIC 100PF	5% 50V	Q11	8-729-175-22	TRANSISTOR 2SC2752-L	
C16	1-124-915-11	ELECT 10MF	20% 25V	Q12	8-729-200-17	TRANSISTOR 2SA1091-0	
C17	1-126-233-11	ELECT 22MF	20% 16V	Q13	8-729-119-80	TRANSISTOR 2SC2688-LK	
C18	1-102-973-00	CERAMIC 100PF	5% 50V	Q14	8-729-202-53	TRANSISTOR 2SD1556-LB	
C19	1-123-369-00	ELECT 4.7MF	20% 25V	Q15	8-729-313-42	TRANSISTOR 2SD1134-C	
C20	1-136-161-00	FILM 0.047MF	5% 50V	Q16	8-729-385-82	TRANSISTOR 2SB858-C	
C21	1-101-810-00	CERAMIC 100PF	5% 500V	<RESISTOR>			
C22	1-108-700-11	MYLAR 0.047MF	10% 200V	R1	1-249-418-11	CARBON 1.2K 5% 1/4W	
C23	1-123-024-21	ELECT 33MF	160V	R2	1-249-425-11	CARBON 4.7K 5% 1/4W	
C24	1-124-046-00	ELECT 10MF	160V	R3	1-249-429-11	CARBON 10K 5% 1/4W	
C25	1-136-612-11	FILM 2.4MF	5% 200V	R4	1-249-429-11	CARBON 10K 5% 1/4W	
C26	1-136-161-00	FILM 0.047MF	5% 50V	R5	1-249-429-11	CARBON 10K 5% 1/4W	
C27	1-108-700-11	MYLAR 0.047MF	10% 200V	R6	1-249-429-11	CARBON 10K 5% 1/4W	
C28	1-124-666-11	ELECT 4.7MF	20% 200V	R7	1-249-421-11	CARBON 2.2K 5% 1/4W	
C29	1-101-810-00	CERAMIC 100PF	5% 500V	R8	1-249-441-11	CARBON 100K 5% 1/4W	
C30	1-162-135-11	CERAMIC 560PF	10% 2KV	R9	1-249-429-11	CARBON 10K 5% 1/4W	
C31	1-136-069-00	FILM 0.0044MF	3% 2KV	R10	1-249-418-11	CARBON 1.2K 5% 1/4W	
C32	1-136-069-00	FILM 0.0044MF	3% 2KV	R11	1-249-448-11	CARBON 1.2 5% 1/4W	F
C33	1-124-512-11	ELECT 33MF	20% 50V	R12	1-249-448-11	CARBON 1.2 5% 1/4W	F
C34	1-124-512-11	ELECT 33MF	20% 50V	R13	1-249-417-11	CARBON 1K 5% 1/4W	
C35	1-126-163-11	ELECT 4.7MF	20% 50V	R14	1-215-887-00	METAL OXIDE 150 5% 2W	F
C36	1-126-163-11	ELECT 4.7MF	20% 50V	R15	1-249-429-11	CARBON 10K 5% 1/4W	
C37	1-161-051-00	CERAMIC 0.01MF	10% 50V	R22	1-249-417-11	CARBON 1K 5% 1/4W	
C39	1-162-318-11	CERAMIC 0.001MF	10% 500V	R23	1-215-445-00	METAL 10K 1% 1/4W	
C40	1-126-966-11	ELECT 10MF	20% 16V	R24	1-215-445-00	METAL 10K 1% 1/4W	
C41	1-102-244-00	CERAMIC 220PF	10% 500V	R25	1-215-431-00	METAL 2.7K 1% 1/4W	
C42	1-102-973-00	CERAMIC 100PF	5% 50V	R26	1-215-431-00	METAL 2.7K 1% 1/4W	
<DIODE>				R27	1-249-435-11	CARBON 33K 5% 1/4W	
D1	8-719-110-31	DIODE RD12ESB2					
D2	8-719-911-19	DIODE 1SS119					
D3	8-719-911-19	DIODE 1SS119					
D4	8-719-911-19	DIODE 1SS119					
D7	8-719-110-03	DIODE RD7.5ESB2					
D8	8-719-300-76	DIODE RH-1A					

EA	HA	X	Y	W	HX	HZ
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REF.NO.	PART NO.	DESCRIPTION	REMARK
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R28	1-215-461-00	METAL	47K 1% 1/4W
R29	1-249-429-11	CARBON	10K 5% 1/4W
R30	1-249-429-11	CARBON	10K 5% 1/4W
R31	1-247-868-11	CARBON	36K 5% 1/4W
R32	1-249-429-11	CARBON	10K 5% 1/4W

R33	1-249-427-11	CARBON	6.8K 5% 1/4W
R34	1-215-433-00	METAL	3.3K 1% 1/4W
R35	1-215-435-00	METAL	3.9K 1% 1/4W
R36	1-249-429-11	CARBON	10K 5% 1/4W
R37	1-249-441-11	CARBON	100K 5% 1/4W

R38	1-249-429-11	CARBON	10K 5% 1/4W
R39	1-215-469-00	METAL	100K 1% 1/4W
R40	1-249-429-11	CARBON	10K 5% 1/4W
R41	1-249-429-11	CARBON	10K 5% 1/4W
R42	1-215-876-00	METAL OXIDE	15K 5% 1W F

R43	1-215-859-00	METAL OXIDE	22 5% 1W F
R44	1-216-349-00	METAL OXIDE	1 5% 1W F
R45	1-249-417-11	CARBON	1K 5% 1/4W
R46	1-249-417-11	CARBON	1K 5% 1/4W
R47	1-216-463-00	METAL OXIDE	12K 5% 2W F

R48	1-216-346-00	METAL OXIDE	0.56 5% 1W F
R49	1-249-382-11	CARBON	1.2 5% 1/4W F
R50	1-247-826-00	CARBON	620 5% 1/4W
R51	1-247-826-00	CARBON	620 5% 1/4W
R52	1-215-445-00	METAL	10K 1% 1/4W

R53	1-215-445-00	METAL	10K 1% 1/4W
R54	1-215-445-00	METAL	10K 1% 1/4W F
R55	1-249-394-11	CARBON	12 5% 1/4W
R56	1-215-445-00	METAL	10K 1% 1/4W
R57	1-215-445-00	METAL	10K 1% 1/4W

R58	1-249-405-11	CARBON	100 5% 1/4W
R59	1-249-419-11	CARBON	1.5K 5% 1/4W
R60	1-249-419-11	CARBON	1.5K 5% 1/4W
R61	1-215-882-00	METAL OXIDE	22 5% 2W F
R62	1-215-882-00	METAL OXIDE	22 5% 2W F

R63	1-216-361-00	METAL OXIDE	0.22 5% 2W F
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<TRANSFORMER>

T1	1-460-067-11	HLT
T2	1-407-850-00	DLT
T3	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T4	1-437-079-00	TRANSFORMER, HORIZONTAL DRIVE
T5	1-439-383-11	HOT

*1-617-890-11 HA BOARD

<CONNECTOR>

HA1	*1-566-055-11	PIN, CONNECTOR 3P
HA2	*1-566-056-11	PIN, CONNECTOR 4P
HA3	*1-566-064-11	PIN, CONNECTOR 12P
HA4	*1-566-054-11	PIN, CONNECTOR 2P

<RESISTOR>

R1	1-247-814-11	CARBON	200 5% 1/4W
R2	1-215-469-00	METAL	100K 1% 1/4W

<VARIABLE RESISTOR>

RV1	1-237-519-21	RES, ADJ, CERMET 20K
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REF.NO.	PART NO.	DESCRIPTION	REMARK
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<SWITCH>

S1	1-570-565-11	SWITCH, PUSH (10 KEY)
S2	1-570-565-11	SWITCH, PUSH (10 KEY)
S3	1-570-565-11	SWITCH, PUSH (10 KEY)
S4	1-570-565-11	SWITCH, PUSH (10 KEY)
S5	1-570-565-11	SWITCH, PUSH (10 KEY)

S6	1-570-565-11	SWITCH, PUSH (10 KEY)
S7	1-570-565-11	SWITCH, PUSH (10 KEY)
S8	1-570-565-11	SWITCH, PUSH (10 KEY)
S9	1-570-565-11	SWITCH, PUSH (10 KEY)
S10	1-570-565-11	SWITCH, PUSH (10 KEY)

*1-617-892-11 X BOARD

<DIODE>

D1	8-719-920-21	DIODE LT-9220H
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*1-617-893-11 Y BOARD

<DIODE>

D1	8-719-812-43	DIODE TLG124A
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*1-627-678-11 W BOARD

<CAPACITOR>

C1	1-108-692-11	MYLAR	0.01MF	10%	200V
C2	1-108-692-11	MYLAR	0.01MF	10%	200V

<RESISTOR>

R1	1-214-702-00	METAL	75 1% 1/4W
R2	1-214-702-00	METAL	75 1% 1/4W
R3	1-214-702-00	METAL	75 1% 1/4W

*1-647-258-11 HX BOARD

<SWITCH>

S1	1-692-470-11	SWITCH, PUSH (4 KEY)
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A-1371-896-A HZ BOARD, COMPLETE

<CAPACITOR>

C1	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C2	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C3	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C4	1-163-031-11	CERAMIC CHIP 0.01MF	50V

7. ELECTRICAL PARTS LIST

7-44

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC7	8-759-239-88	IC TC74HCT02AF	
IC8	8-759-240-03	IC TC74HCT32AF	
IC9	8-759-233-66	IC TC74HCT04AF	
IC10	8-759-981-48	IC TL082M	
IC11	8-759-240-65	IC TC74HCT139AF	
IC12	8-759-009-05	IC MC14051BF	
IC13	8-759-938-68	IC CXD1095Q	
IC14	8-759-981-48	IC TL082M	
IC15	8-759-238-69	IC TC74HC299AF-TP1	
IC16	8-759-009-05	IC MC14051BF	
IC17	8-759-239-88	IC TC74HCT02AF	
IC18	8-759-981-48	IC TL082M	
IC19	8-759-981-48	IC TL082M	
IC20	8-759-518-73	IC DAC8043GP	
IC21	8-759-518-76	IC REF02EZ	
IC22	8-759-981-48	IC TL082M	
IC23	8-759-981-48	IC TL082M	
IC24	8-759-164-55	IC HD6475368CP-BVM	
<IC SOCKET>			
ICS3	1-526-652-21	SOCKET, IC (DP) 8P	
ICS24	1-540-069-11	SOCKET, IC (IC113) 84P	
<COIL>			
L1	1-408-409-00	INDUCTOR 10UH	
L2	1-408-409-00	INDUCTOR 10UH	
L3	1-410-211-51	INDUCTOR CHIP 39UH	
<TRANSISTOR>			
Q2	8-729-901-01	TRANSISTOR DTC144EK	
Q3	8-729-901-01	TRANSISTOR DTC144EK	
Q4	8-729-901-01	TRANSISTOR DTC144EK	
Q5	8-729-901-01	TRANSISTOR DTC144EK	
Q6	8-729-901-01	TRANSISTOR DTC144EK	
Q7	8-729-901-01	TRANSISTOR DTC144EK	
Q8	8-729-901-01	TRANSISTOR DTC144EK	
Q9	8-729-901-01	TRANSISTOR DTC144EK	
Q10	8-729-901-01	TRANSISTOR DTC144EK	
Q11	8-729-901-01	TRANSISTOR DTC144EK	
Q12	8-729-901-01	TRANSISTOR DTC144EK	
Q13	8-729-901-01	TRANSISTOR DTC144EK	
Q14	8-729-901-01	TRANSISTOR DTC144EK	
Q15	8-729-901-01	TRANSISTOR DTC144EK	
Q16	8-729-901-01	TRANSISTOR DTC144EK	
Q17	8-729-901-01	TRANSISTOR DTC144EK	
Q18	8-729-901-01	TRANSISTOR DTC144EK	
Q19	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q20	8-729-901-01	TRANSISTOR DTC144EK	
Q21	8-729-901-01	TRANSISTOR DTC144EK	
Q22	8-729-901-01	TRANSISTOR DTC144EK	
Q23	8-729-901-01	TRANSISTOR DTC144EK	
Q24	8-729-901-01	TRANSISTOR DTC144EK	
Q25	8-729-901-01	TRANSISTOR DTC144EK	
Q26	8-729-901-01	TRANSISTOR DTC144EK	
Q27	8-729-901-01	TRANSISTOR DTC144EK	
Q28	8-729-901-06	TRANSISTOR DTA144EK	
Q29	8-729-901-01	TRANSISTOR DTC144EK	
Q30	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q900	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q902	8-729-901-01	TRANSISTOR DTC144EK	

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q903	8-729-901-01	TRANSISTOR DTC144EK	
<RESISTOR>			
JR1	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR2	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR3	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR4	1-216-295-00	METAL GLAZE 0 5%	1/10W
R1	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R2	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R3	1-249-417-11	CARBON 1K 5%	1/4W
R4	1-216-025-00	METAL GLAZE 100 5%	1/10W
R5	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R6	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R7	1-249-417-11	CARBON 1K 5%	1/4W
R8	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R9	1-249-417-11	CARBON 1K 5%	1/4W
R10	1-216-090-00	METAL GLAZE 51K 5%	1/10W
R11	1-216-080-00	METAL GLAZE 20K 5%	1/10W
R12	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R13	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R14	1-249-417-11	CARBON 1K 5%	1/4W
R15	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R16	1-249-417-11	CARBON 1K 5%	1/4W
R17	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R18	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R19	1-249-422-11	CARBON 2.7K 5%	1/4W
R20	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R21	1-249-417-11	CARBON 1K 5%	1/4W
R22	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R23	1-249-422-11	CARBON 2.7K 5%	1/4W
R24	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R25	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R26	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R27	1-249-422-11	CARBON 2.7K 5%	1/4W
R28	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R29	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R30	1-249-422-11	CARBON 2.7K 5%	1/4W
R31	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R32	1-216-079-00	METAL GLAZE 18K 5%	1/10W
R33	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R34	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R35	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R36	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R37	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R38	1-249-417-11	CARBON 1K 5%	1/4W
R39	1-216-093-00	METAL GLAZE 68K 5%	1/10W
R40	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R41	1-249-417-11	CARBON 1K 5%	1/4W
R42	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R43	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R44	1-249-417-11	CARBON 1K 5%	1/4W
R45	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R46	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R47	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R48	1-249-417-11	CARBON 1K 5%	1/4W
R49	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R50	1-249-417-11	CARBON 1K 5%	1/4W
R51	1-249-417-11	CARBON 1K 5%	1/4W
R52	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R53	1-249-417-11	CARBON 1K 5%	1/4W
R54	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R55	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R56	1-216-073-00	METAL GLAZE 10K 5%	1/10W

HZ

HW

HH

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REF.NO. PART NO. DESCRIPTION

REMARK

REF.NO. PART NO.

DESCRIPTION

REMARK

R57 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R58 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R59 1-216-097-00 METAL GLAZE 100K 5% 1/10W
 R60 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R61 1-216-073-00 METAL GLAZE 10K 5% 1/10W

R62 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R63 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W
 R64 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R65 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W
 R66 1-216-073-00 METAL GLAZE 10K 5% 1/10W

R67 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W
 R68 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R69 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W
 R70 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R71 1-216-073-00 METAL GLAZE 10K 5% 1/10W

R73 1-216-097-00 METAL GLAZE 100K 5% 1/10W
 R74 1-216-049-00 METAL GLAZE 1K 5% 1/10W
 R75 1-216-081-00 METAL GLAZE 22K 5% 1/10W
 R76 1-216-097-00 METAL GLAZE 100K 5% 1/10W
 R77 1-216-074-00 METAL GLAZE 11K 5% 1/10W

R78 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R79 1-216-080-00 METAL GLAZE 20K 5% 1/10W
 R80 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R81 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R82 1-216-097-00 METAL GLAZE 100K 5% 1/10W

R83 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R84 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R85 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R86 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R87 1-216-073-00 METAL GLAZE 10K 5% 1/10W

R88 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R89 1-216-097-00 METAL GLAZE 100K 5% 1/10W
 R90 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R91 1-216-081-00 METAL GLAZE 22K 5% 1/10W
 R92 1-216-089-00 METAL GLAZE 47K 5% 1/10W

R93 1-216-089-00 METAL GLAZE 47K 5% 1/10W
 R94 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R95 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R97 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R100 1-216-073-00 METAL GLAZE 10K 5% 1/10W

R101 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R102 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W
 R103 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W
 R104 1-216-053-00 METAL GLAZE 1.5K 5% 1/10W
 R105 1-216-053-00 METAL GLAZE 1.5K 5% 1/10W

R106 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W
 R107 1-216-073-00 METAL GLAZE 10K 5% 1/10W
 R181 1-216-049-00 METAL GLAZE 1K 5% 1/10W
 R191 1-216-049-00 METAL GLAZE 1K 5% 1/10W
 R208 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W

R209 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W

<SWITCH>

S1 1-572-482-11 SWITCH, KEY BOARD (1 KEY)
 S2 1-572-482-11 SWITCH, KEY BOARD (1 KEY)

<CRYSTAL>

X1 1-577-121-11 VIBRATOR, CRYSTAL

*1-647-257-11 HW BOARD

<DIODE>

D1 8-719-938-68 DIODE GL3HY8
 *4-026-910-00 HOLDER, LED; D1
 D2 8-719-812-41 DIODE TLR124
 *4-026-910-00 HOLDER, LED; D2

<SWITCH>

SW1 1-570-566-11 SWITCH, PUSH (4 KEY)
 SW2 1-570-566-11 SWITCH, PUSH (4 KEY)
 SW3 1-570-566-11 SWITCH, PUSH (4 KEY)
 SW4 1-570-566-11 SWITCH, PUSH (4 KEY)

*1-627-682-11 HH BOARD

*1-566-614-11 PLUG (L TYPE) 3P

<VARIABLE RESISTOR>

RV1 1-238-332-11 RES, VAR, CARBON 20K
 RV2 1-238-332-11 RES, VAR, CARBON 20K
 RV3 1-238-332-11 RES, VAR, CARBON 20K
 RV4 1-238-332-11 RES, VAR, CARBON 20K

A-1375-114-A HY BOARD, COMPLETE

<CAPACITOR>

C1 1-124-584-00 ELECT 100MF 20% 10V
 C2 1-124-584-00 ELECT 100MF 20% 10V
 C3 1-124-584-00 ELECT 100MF 20% 10V
 C4 1-163-031-11 CERAMIC CHIP 0.01MF 50V
 C5 1-163-031-11 CERAMIC CHIP 0.01MF 50V
 C6 1-163-031-11 CERAMIC CHIP 0.01MF 50V

<DIODE>

D1 8-719-404-46 DIODE MA110
 D2 8-719-404-46 DIODE MA110
 D3 8-719-404-46 DIODE MA110
 D4 8-719-404-46 DIODE MA110
 D5 8-719-404-46 DIODE MA110

D6 8-719-404-46 DIODE MA110
 D7 8-719-404-46 DIODE MA110
 D8 8-719-404-46 DIODE MA110
 D9 8-719-404-46 DIODE MA110
 D10 8-719-404-46 DIODE MA110

REF.NO.	PART NO.	DESCRIPTION
D11	8-719-404-46	DIODE MA110
D12	8-719-938-68	DIODE GL3HY8
D13	*4-374-937-01	HOLDER, LED; D12
	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D13
D14	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D14
D15	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D15
D16	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D16
D17	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D17
D18	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D18
D19	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D19
D20	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D20
D21	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D21
D22	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D22
D23	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D23
D24	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D24
D25	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D25
D26	8-719-404-46	DIODE MA110
D27	8-719-404-46	DIODE MA110
D28	8-719-404-46	DIODE MA110
D29	8-719-404-46	DIODE MA110
D30	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D30
D31	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D31
D32	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D32
D33	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D33
D34	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D34
D35	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D35
D36	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D36
D37	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D37
D38	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D38
D39	8-719-404-46	DIODE MA110
D40	8-719-404-46	DIODE MA110
D41	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D41
D42	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D42
D43	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D43
D44	8-719-938-68	DIODE GL3HY8
	*4-374-937-01	HOLDER, LED; D44
D45	8-719-404-46	DIODE MA110
D46	8-719-404-46	DIODE MA110
D47	8-719-404-46	DIODE MA110

REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
	D48	8-719-404-46	DIODE MA110	
	D49	8-719-404-46	DIODE MA110	
	D50	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D50	
	D51	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D51	
	D52	8-719-404-46	DIODE MA110	
	D53	8-719-404-46	DIODE MA110	
	D54	8-719-404-46	DIODE MA110	
	D55	8-719-404-46	DIODE MA110	
	D56	8-719-404-46	DIODE MA110	
	D57	8-719-404-46	DIODE MA110	
	D58	8-719-404-46	DIODE MA110	
	D59	8-719-404-46	DIODE MA110	
	D60	8-719-404-46	DIODE MA110	
	D61	8-719-404-46	DIODE MA110	
	D62	8-719-404-46	DIODE MA110	
	D63	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D63	
	D64	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D64	
	D65	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D65	
	D66	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D66	
	D67	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D67	
	D68	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D68	
	D69	8-719-938-68	DIODE GL3HY8	
		*4-374-937-01	HOLDER, LED; D69	
	<CONNECTOR>			
	HY1	*1-566-045-11	PIN, CONNECTOR 6P	
	HY2	*1-566-047-11	PIN, CONNECTOR 8P	
	HY3	*1-566-052-11	PIN, CONNECTOR 13P	
	HY4	*1-566-047-11	PIN, CONNECTOR 8P	
	<IC>			
	IC1	8-757-991-00	IC CX-7991	
	IC2	8-757-991-00	IC CX-7991	
	IC3	8-757-991-00	IC CX-7991	
	<TRANSISTOR>			
	Q1	8-729-175-72	TRANSISTOR 2SC2757-T33	
	<RESISTOR>			
	JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR6	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR7	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR8	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR9	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR10	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR11	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
	JR13	1-216-295-00	METAL GLAZE 0 5% 1/10W	

HY TB

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
JR14	1-216-295-00	METAL GLAZE 0 5% 1/10W		S14	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR15	1-216-295-00	METAL GLAZE 0 5% 1/10W		S15	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR16	1-216-295-00	METAL GLAZE 0 5% 1/10W		S16	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR17	1-216-295-00	METAL GLAZE 0 5% 1/10W		S17	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR18	1-216-295-00	METAL GLAZE 0 5% 1/10W		S18	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R1	1-216-043-00	METAL GLAZE 560 5% 1/10W		S19	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R2	1-216-043-00	METAL GLAZE 560 5% 1/10W		S20	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R3	1-216-043-00	METAL GLAZE 560 5% 1/10W		S21	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R4	1-216-043-00	METAL GLAZE 560 5% 1/10W		S22	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R5	1-216-043-00	METAL GLAZE 560 5% 1/10W		S23	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R6	1-216-043-00	METAL GLAZE 560 5% 1/10W		S24	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R7	1-216-043-00	METAL GLAZE 560 5% 1/10W		S25	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R8	1-216-043-00	METAL GLAZE 560 5% 1/10W		S26	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R9	1-216-043-00	METAL GLAZE 560 5% 1/10W		S27	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R10	1-216-043-00	METAL GLAZE 560 5% 1/10W		S28	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R11	1-216-043-00	METAL GLAZE 560 5% 1/10W		S29	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R12	1-216-043-00	METAL GLAZE 560 5% 1/10W		S30	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R13	1-216-043-00	METAL GLAZE 560 5% 1/10W		S31	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R14	1-216-043-00	METAL GLAZE 560 5% 1/10W		S32	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R15	1-216-043-00	METAL GLAZE 560 5% 1/10W		*****			
R16	1-216-043-00	METAL GLAZE 560 5% 1/10W		*A-1390-344-A TB BOARD, COMPLETE			
R17	1-216-043-00	METAL GLAZE 560 5% 1/10W		*****			
R18	1-216-043-00	METAL GLAZE 560 5% 1/10W		<CONNECTOR>			
R19	1-216-045-00	METAL GLAZE 680 5% 1/10W		CN1	*1-564-431-11	POST, CONNECTOR 3P	
R20	1-216-033-00	METAL GLAZE 220 5% 1/10W		CN2	*1-564-431-11	POST, CONNECTOR 3P	
R21	1-216-043-00	METAL GLAZE 560 5% 1/10W		CN11	*1-561-724-00	SOCKET, CONNECTOR 2P	
R22	1-216-033-00	METAL GLAZE 220 5% 1/10W		CN12	*1-561-724-00	SOCKET, CONNECTOR 2P	
R23	1-216-049-00	METAL GLAZE 1K 5% 1/10W		<RESISTOR>			
R24	1-216-043-00	METAL GLAZE 560 5% 1/10W		R100	1-249-422-11	CARBON 2.7K 5% 1/4W	
R25	1-216-043-00	METAL GLAZE 560 5% 1/10W		<CONNECTOR>			
R26	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB4	*1-566-054-11	PIN, CONNECTOR 2P	
R27	1-216-049-00	METAL GLAZE 1K 5% 1/10W		TB5	*1-566-054-11	PIN, CONNECTOR 2P	
R28	1-216-049-00	METAL GLAZE 1K 5% 1/10W		TB6	*1-566-060-11	PIN, CONNECTOR 8P	
R29	1-216-049-00	METAL GLAZE 1K 5% 1/10W		TB7	*1-566-054-11	PIN, CONNECTOR 2P	
R30	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB8	*1-566-058-11	PIN, CONNECTOR 6P	
R31	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB9	*1-566-060-11	PIN, CONNECTOR 8P	
R32	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB10	*1-566-064-11	PIN, CONNECTOR 12P	
R33	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB11	*1-566-055-11	PIN, CONNECTOR 3P	
R34	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB12	*1-566-064-11	PIN, CONNECTOR 12P	
R35	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB13	*1-566-062-11	PIN, CONNECTOR 10P	
R36	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB14	*1-566-064-11	PIN, CONNECTOR 12P	
R37	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB15	*1-566-060-11	PIN, CONNECTOR 8P	
R38	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB16	*1-566-057-11	PIN, CONNECTOR 5P	
R39	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB17	*1-566-057-11	PIN, CONNECTOR 5P	
R40	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB18	*1-566-055-11	PIN, CONNECTOR 3P	
R41	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB19	*1-566-056-11	PIN, CONNECTOR 4P	
R42	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB20	*1-566-056-11	PIN, CONNECTOR 4P	
R43	1-216-043-00	METAL GLAZE 560 5% 1/10W		TB21	*1-566-056-11	PIN, CONNECTOR 4P	
<SWITCH>				TB22	*1-566-054-11	PIN, CONNECTOR 2P	
S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB23	*1-566-054-11	PIN, CONNECTOR 2P	
S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB24	*1-566-054-11	PIN, CONNECTOR 2P	
S3	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB28	*1-566-062-11	PIN, CONNECTOR 10P	
S4	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB29	*1-566-060-11	PIN, CONNECTOR 8P	
S5	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB31	*1-561-337-00	CONNECTOR, MULTI	
S6	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB32	*1-561-337-00	CONNECTOR, MULTI	
S7	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		TB33	*1-561-337-00	CONNECTOR, MULTI	
S8	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					
S9	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					
S10	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					
S11	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					
S12	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					
S13	1-572-482-11	SWITCH, KEY BOARD (1 KEY)					

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

TB **TA**

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
TB34	*1-561-337-00	CONNECTOR, MULTI		4-312-246-00	BAG, PROTECTION		
TB35	*1-561-337-00	CONNECTOR, MULTI		4-378-901-01	KEY		
TB36	*1-561-337-00	CONNECTOR, MULTI		4-379-427-01	PLATE, NUMBER, TALLY		
TB37	*1-561-337-00	CONNECTOR, MULTI		*4-379-479-01	CUSHION (UPPER)		
TB38	*1-561-337-00	CONNECTOR, MULTI		*4-379-480-01	CUSHION (LOWER)		
TB39	*1-561-337-00	CONNECTOR, MULTI					
TB40	*1-561-337-00	CONNECTOR, MULTI		*4-379-482-01	SPACER		

	*1-647-911-11	TA BOARD					

<CONNECTOR>							
TA1	*1-566-054-11	PIN, CONNECTOR 2P					
TA2	*1-566-055-11	PIN, CONNECTOR 3P					
TA3	*1-566-056-11	PIN, CONNECTOR 4P					
TA4	*1-566-057-11	PIN, CONNECTOR 5P					
TA5	*1-566-058-11	PIN, CONNECTOR 6P					
TA6	*1-566-055-11	PIN, CONNECTOR 3P					
TA7	*1-566-058-11	PIN, CONNECTOR 6P					
TA8	*1-566-042-11	PIN, CONNECTOR 3P					
TA9	*1-566-045-11	PIN, CONNECTOR 6P					
TA10	*1-566-045-11	PIN, CONNECTOR 6P					
TA11	*1-566-045-11	PIN, CONNECTOR 6P					
TA12	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P					
TA13	*1-561-337-00	CONNECTOR, MULTI					
TA14	*1-561-337-00	CONNECTOR, MULTI					
TA15	*1-561-337-00	CONNECTOR, MULTI					

MISCELLANEOUS							

Δ 1-162-142-21	CAP BLOCK, HIGH VOLTAGE						
Δ 1-237-165-12	RESISTOR ASSY, HIGH-VOLTAGE						
Δ 1-426-263-11	COIL, DEMAGNETIZATION						
Δ 1-439-382-21	TRANSFORMER ASSY, FLYBACK (NX-2011)						
Δ 1-451-287-21	DEFLECTION YOKE (Y14FAA)						
1-452-032-00	MAGNET, DISK; 10MM ϕ						
Δ 1-452-117-31	CRT NECK ASSY						
Δ 1-452-261-22	CRT NECK ASSY (362)						
Δ 1-453-103-41	HIGH-VOLTAGE BLOCK (HB-203(C))						
Δ 1-565-791-11	CONNECTOR, BNC 1P						
Δ 1-570-052-12	SWITCH, PUSH (AC POWER) (1 KEY)						
1-941-995-05	CONNECTOR ASSY, MICRO 13P						
Δ 8-738-051-05	CRT (W34JNR20X) (BVM-1311 ONLY)						
Δ 8-738-052-05	CRT (W34JNR21X) (BVM-1411P ONLY)						

ACCESSORIES & PACKING MATERIALS							

PART NO.	DESCRIPTION	REMARK					
*A-1394-088-A	Z BOARD, COMPLETE						
Δ 1-532-203-11	FUSE, TIME-LAG (2.0A/250V)	(BVM-1411P ONLY)					
Δ 1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	(BVM-1311 ONLY)					
Δ 1-551-812-11	CORD, POWER (7.0A/125V)	(BVM-1411P ONLY)					
1-560-776-00	SOCKET, CONNECTOR 10P	(BVM-1411P ONLY)					
2-990-242-01	HOLDER (B), PLUG						
4-039-980-01	MANUAL, OPERATION & MAINTENANCE						
*4-040-001-01	INDIVIDUAL CARTON	(BVM-1411P ONLY)					
*4-040-002-01	INDIVIDUAL CARTON	(BVM-1311 ONLY)					

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SONY[®]

BACKUP FILE

TRINITRON[®] COLOR VIDEO MONITOR

BVM-1311

BVM-1411P

SUPPLEMENT-1

File this Supplement with the OPERATION AND MAINTENANCE MANUAL

INTRODUCTION

- Refer to SUPPLEMENT-1 for modified version of DIAGRAMS, EXPLODED VIEW and ELECTRICAL PARTS LIST.
- Be sure to check the part number of the board applied to the set when performing service.



OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1311)

Serial No. 2000001 and Higher (BVM-1411P)

WARNING

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

VORSICHT!!

Hinweis für den Benutzer
Das Gerät ist nicht für den Einsatz in Bildschirmarbeitsplätzen vorgesehen.

CAUTION!!

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

ATTENTION!!

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTERIEUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LA PANNEAU FRONTAL.**

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6. EXPLODED VIEWS

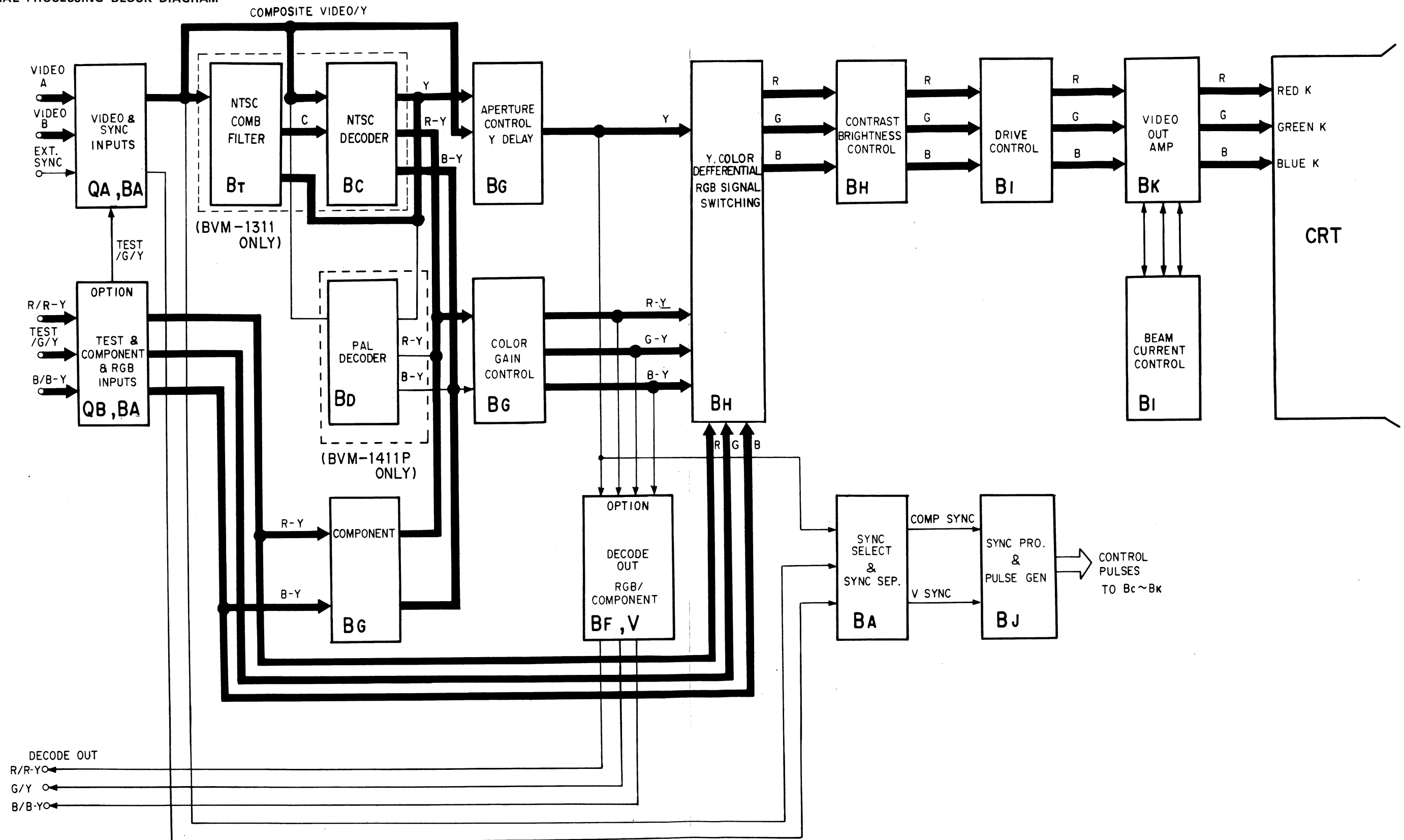
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BLOCK DIAGRAM BLOCK DIAGRAM

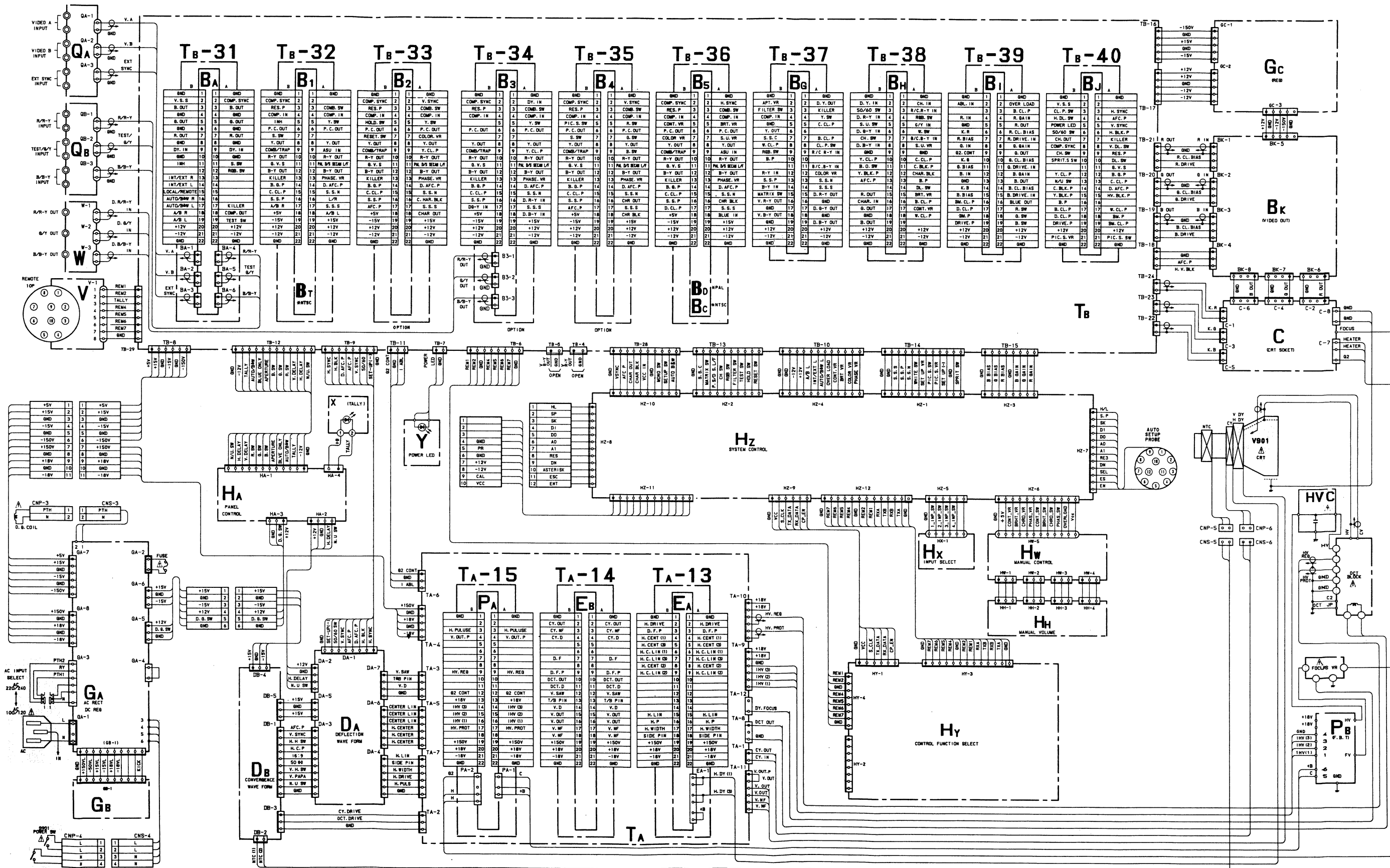
SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM



FRAME FRAME

5-2. FRAME WIRING DIAGRAM



5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

- All capacitors are in μF unless otherwise noted. p : μF 50WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/2W on the C board, 1/10W on the rest of the boards unless otherwise specified.
k Ω =1000 Ω , M Ω =1000k Ω
- Chips resistors are 1/10W.
-  : nonflammable resistor.
-  : internal component.
-  : direct connection to points marked  on the cassis.
-  : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used. When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved. Refer to R52, R53, R67, R68, R124, R126, R222, R227, R228 and R239. Adjust on page 4-13 4-18.
- When replacing the part in below table, be sure to perform the related adjustment.

Reference information

- RESISTOR : RN METAL FILM
: RC SOLID
: FPRD NONFLAMMABLE CARBON
: FUSE NONFLAMMABLE FUSIBLE
: RS NONFLAMMABLE WIREWOUND
: RB NONFLAMMABLE CEMENT
- COIL : LF-8L MICRO INDUCTOR
- CAPACITOR: TA TANTALUM
: PS STYROL
: PP POLYPROPYLENE
: PT MYLAR
: MPS METALIZED POLYESTER
: MPP METALIZED POLYPROPYLENE
: ALB BIPOLAR
: ALT HIGH TEMPERATURE
: AIR HIGH RIPPLE

Part replaced ()	Adjustment ()
C59, IC3, R67, R68, R78, RV2 ... (GA board)	+B MAX (R67, R68) Page 4-13.
Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 ... (GB board)	+B PROTECTOR (R52, R53) Page 4-13.
D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1 ... (PA board) DCT BLOCK	HV REG (R124, R126) Page 4-18.
D205, D207, D214, D215, IC2, R201, R202, R213, R214, R225, R226, R227, R228, R229, R230, R243 (PA board) DCT BLOCK	HV HOLD DOWN (R227, R228) Page 4-16.
D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, R223, R224, R242 ... (PA board) T1 (FBT), R1, R2 ... (PB board)	BEAM CURRENT PROTECTOR-1 (R222) Page 4-17.
D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247 ... (PA board) T1 (FBT), R3, R4 ... (PB board)	BEAM CURRENT PROTECTOR-2 (R239) Page 4-18.

-  : adjustment for repair.
-  : B+ bus.
-  : B- bus.
- Circled numbers are waveform references.
- Waveforms are taken with a color-bar signal input and with a 75 Ω terminator connected to an open terminal.

- Switches and controls are set as follows unless otherwise noted.

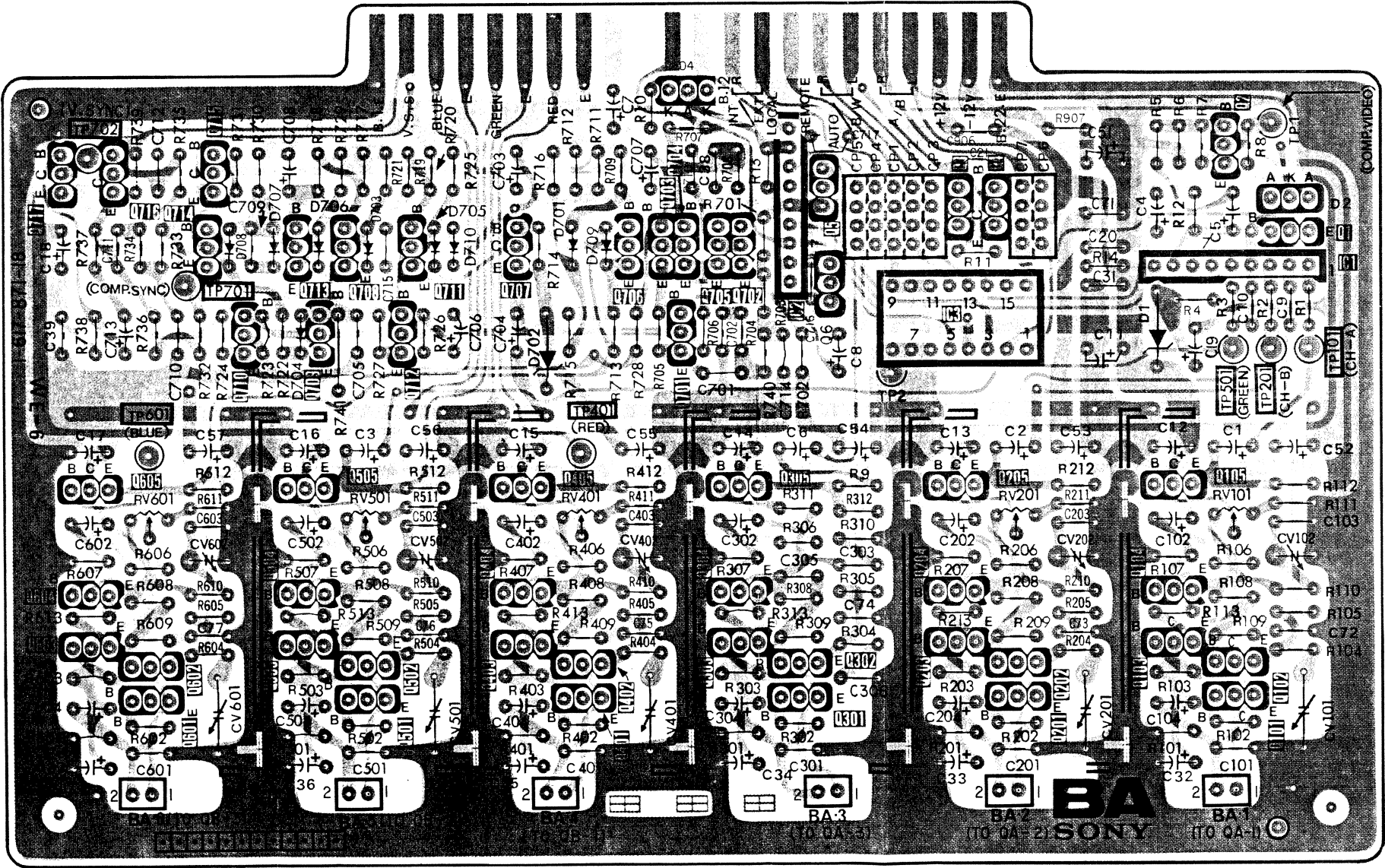
- FRONT PANEL (R)
- INPUT selector 1 HX board
 - CONTRAST MANUAL switch PRESET
 - BRIGHTNESS MANUAL switch PRESET HW board
 - CHROMA MANUAL switch PRESET
 - PHASE MANUAL switch PRESET
- FRONT PANEL (L)
- SCAN MODE switch
 -  UNDER SCAN NOR
 -  H. DELAY NOR
 -  V. DELAY NOR
 - SCREEN switch (R) NOR HA board
 - SCREEN switch (G) NOR
 - SCREEN switch (B) NOR
 - APT switch NOR
 - BLUE ONLY switch NOR
 - MODE selector AUTO
- SUB CONTROL PANEL
- FORMAT button CODED
 - INPUT button A
 - SYNC button INT
 - COLOR SYSTEM button NTSC (BVM-1311)
PAL (BVM-1411P)
 - YC SEP button COMB (BVM-1311)
TRAP (BVM-1411P)
 - WHITE BALANCE button D65/D93
 - ASPECT button 4 : 3
 - PIC SETUP button OFF
 - SAD/VITC/MARKER button OFF
 - FILTER button OFF
 - MATRIX button OFF
 - PAL S/SECAM F/COMB S button OFF
 - CROSS HATCH button OFF
 - SPLIT SCREEN button OFF
 - WHITE button OFF
 - GRAY button OFF
 - AFC switch 2m sec DA board
- HY board

Note:

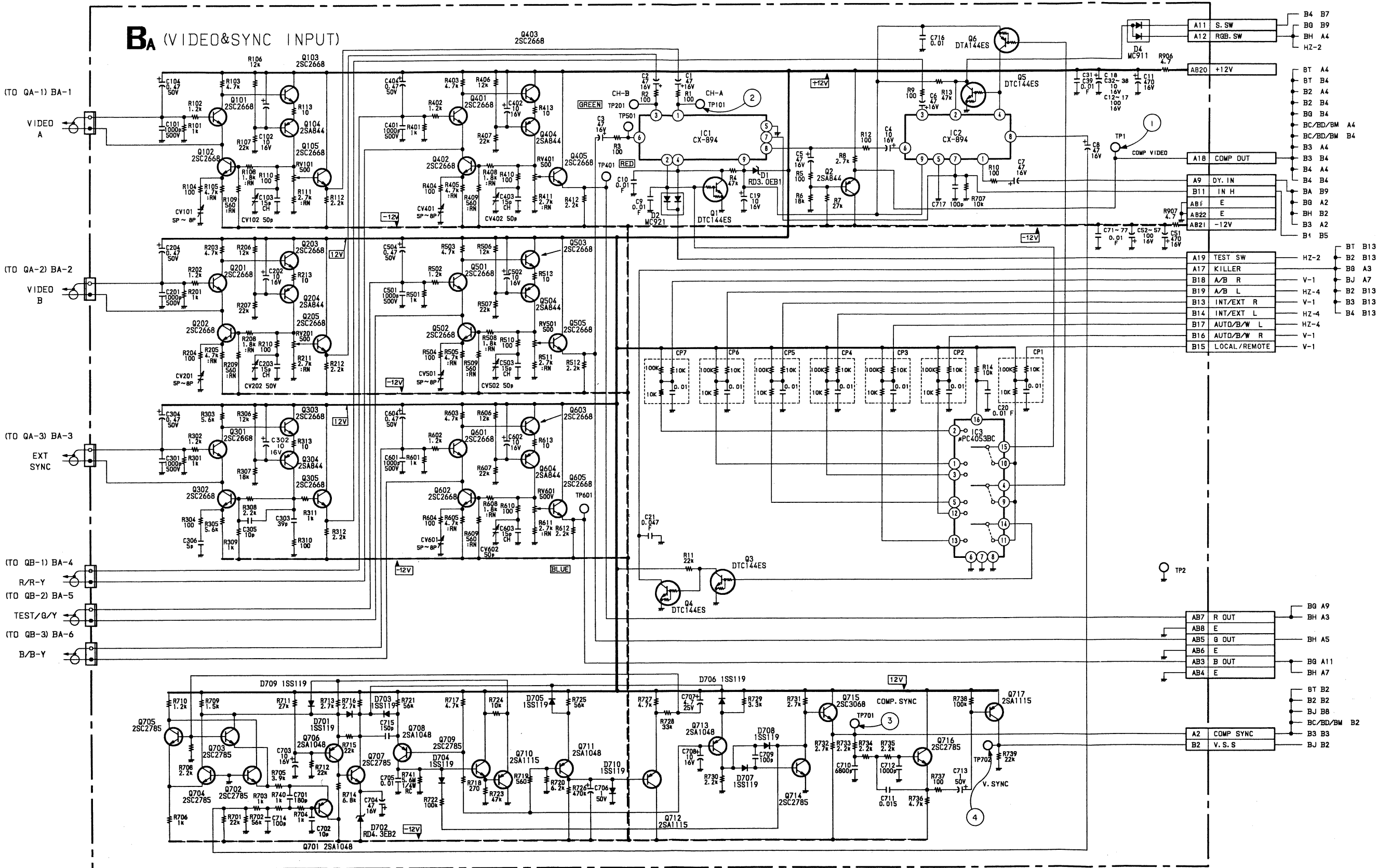
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BA board (SYNC SELECT & SYNC SEP, HOOK UP)

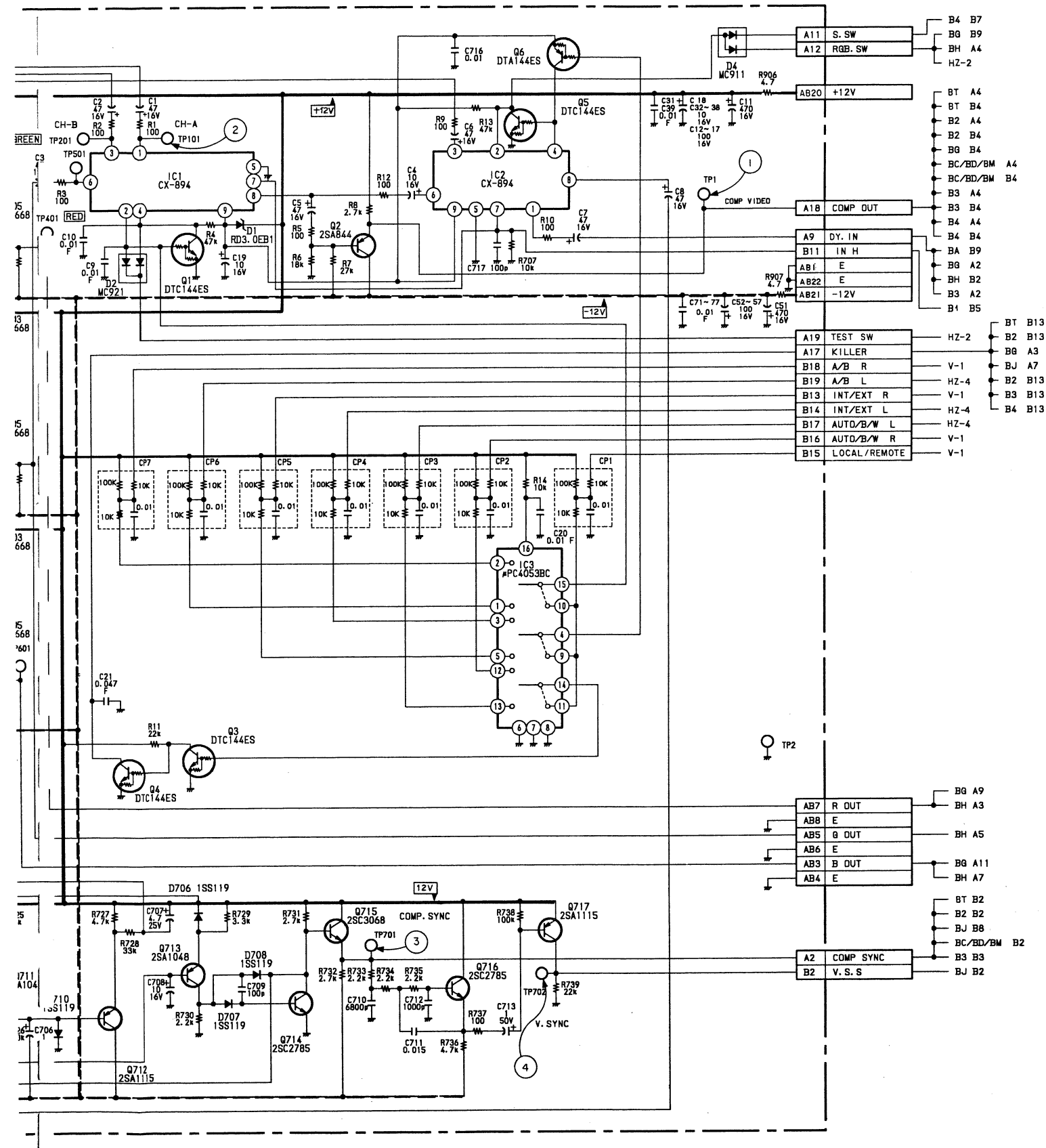
IC	2										3			1															
Q	717	716	715	713	708	711	707	706	704	703	705	702	5	6	3	4			2	1									
	605	604	603	602	601	505	504	503	502	501	405	404	403	402	401	305	304	303	302	301	205	204	203	202	201	105	104	103	102
D	708 707 706 703 705 710										101 709	4											2						
TP ADJ	TP702	TP601	RV601	CV602	CV601	TP701	RV501	CV502	CV501	TR401	RV401	CV402	CV401	TP2	RV201	CV202	CV201	TP501	RV101	TP1	TP201	TP101							



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

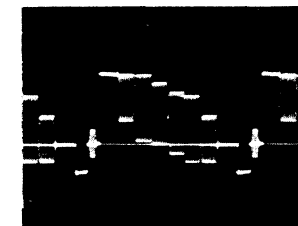


BA BOARD

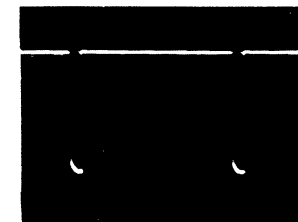


IC1	CX894	INPUT SELECT
2	CX894	SYNC SELECT
3	μPD4053BC	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

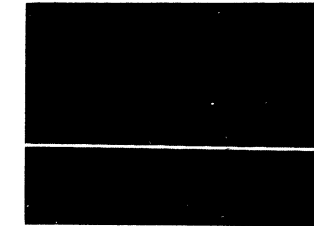
Q603	2SC2668	B-Y/B AMP
604	2SA844	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3.0E-B1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4.3E-B2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)
② 1Vp-p (H)



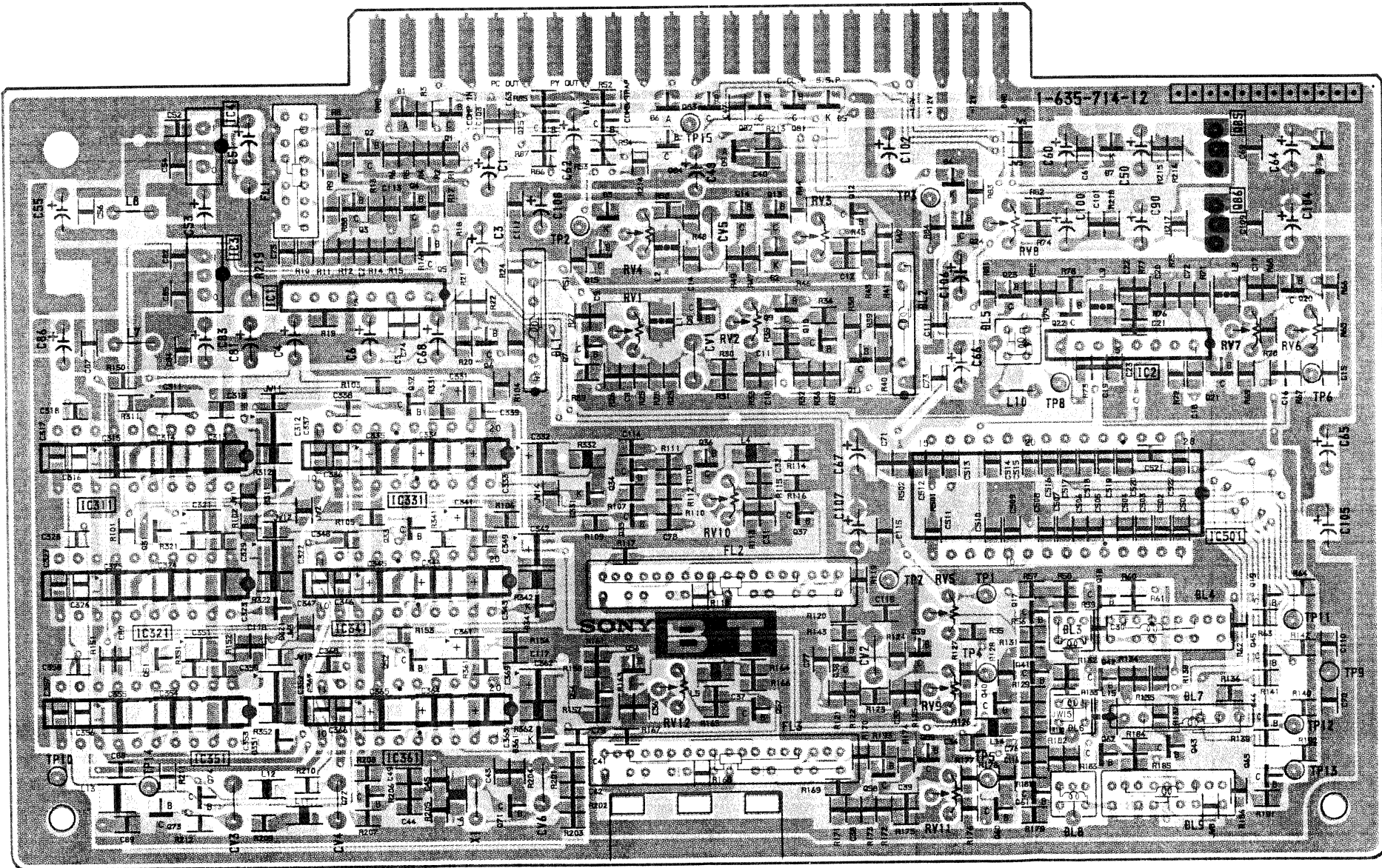
③ 11Vp-p (H)



④ 12Vp-p (V)

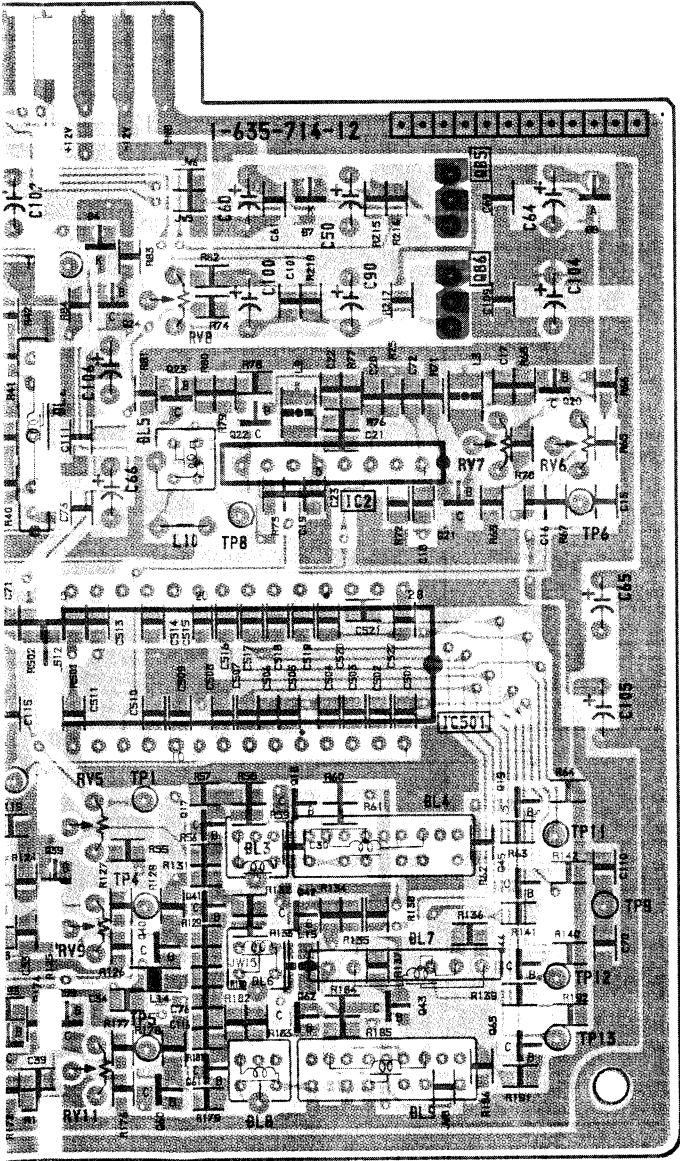
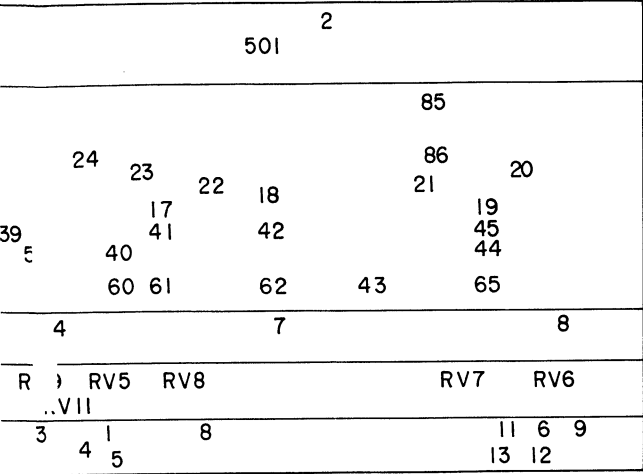
BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF) (BVM-1311 ONLY)

IC	4	1	331	501	2
	3		341		
			361		
Q	2	1	25	16	84
	3	4	83	82	81
	5		8	14	13
	32	6	7	15	34
	33				35
	52				36
					9
					10
					37
					38
					39
					59
					40
					41
					17
					22
					18
					42
					21
					86
					20
					19
					45
					44
D	73	74	72	71	57
					58
					60
					61
					62
					43
					65
ADJ	CV3	CV4	CV6	RV4	CV5
				RV2	RV3
				RV9	RV5
				RV8	RV7
				RV6	
TP	10	14	2	15	7
					3
					4
					5
					8
					11
					6
					9
					13
					12



BT BOARD		
IC1	LA7816	Y SELECT
2	LA7816	C SELECT
3	NJM7809FA	9V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
361	CXL1009P	CCD
501	CXA1539P	CORRELATION
Q1	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUF
12	2SA1226	Y AMP & BUF
13	2SC2757	Y AMP & BUF
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SV
17	2SC1623	BPF 140 ns
18	2SA812	BPF 140 ns
19	2SC1623	BPF 140 ns
20	2SC2757	S COMB C LI
21	2SC1623	S COMB C LI
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SV
32	2SC1623	1H DELAY(N
33	2SC1623	1H DELAY(N
34	2SA812	1H DELAY(N
35	2SA812	1H DELAY(N
36	2SA1226	1H DELAY(N
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns
42	2SA812	BPF 140 ns
43	2SC1623	BPF 140 ns
44	2SC1623	BPF 140 ns
45	2SC1623	BPF 140 ns
52	2SC1623	1H DELAY(N
54	2SA812	1H DELAY(N
56	2SA1226	1H DELAY(N
57	2SC1623	AMP
58	2SA1226	AMP
59	2SC2757	AMP

- Pattern from the side which enables seeing.
- Pattern of the rear side.

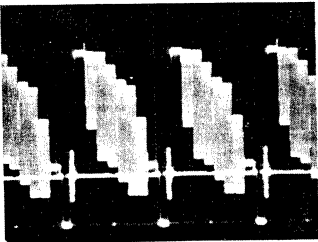


- Pattern from the side which enables seeing.
- Pattern of the rear side.

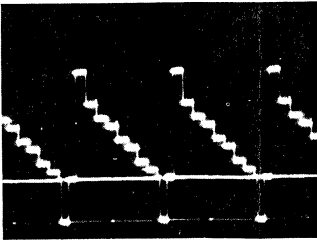
BT BOARD

IC1	LA7816	Y SELECT
2	LA7816	C SELECT
3	NJM7809FA	9V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
361	CXL1009P	CCD
501	CXA1539P	CORRELATION
Q1	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUFFER
12	2SA1226	Y AMP & BUFFER
13	2SC2757	Y AMP & BUFFER
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SW
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
20	2SC2757	S COMB C LEVEL, PHASE
21	2SC1623	S COMB C LEVEL, PHASE
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SW
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
56	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
57	2SC1623	AMP
58	2SA1226	AMP
59	2SC2757	AMP

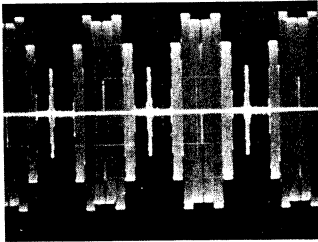
Q60	2SC1623	AMP
61	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
62	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
65	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
71	2SC2757	X'TAL OSC
72	2SA1226	X'TAL OSC
73	2SC2757	X'TAL OSC
74	2SA1226	X'TAL OSC
81	DTA144EK	SW CONTROL
82	DTA144EK	SW CONTROL
83	DTA144EK	SW CONTROL
84	DTA144EK	SW CONTROL
85	2SB734	SW CONTROL
86	2SD774	SW CONTROL
D1	1S2835	SW
2	RD5.6MB2	DC SHIFT
3	1S2837	SW
4	1S2837	SW
5	1S2837	SW CONTROL
6	1S2835	SW CONTROL
7	1S2837	SW CONTROL
8	1S2835	SW CONTROL
9	1S2835	SW CONTROL
331	1S2837	CLAMP
341	1S2837	CLAMP
361	1S2837	CLAMP



① 1.1 Vp-p(H)



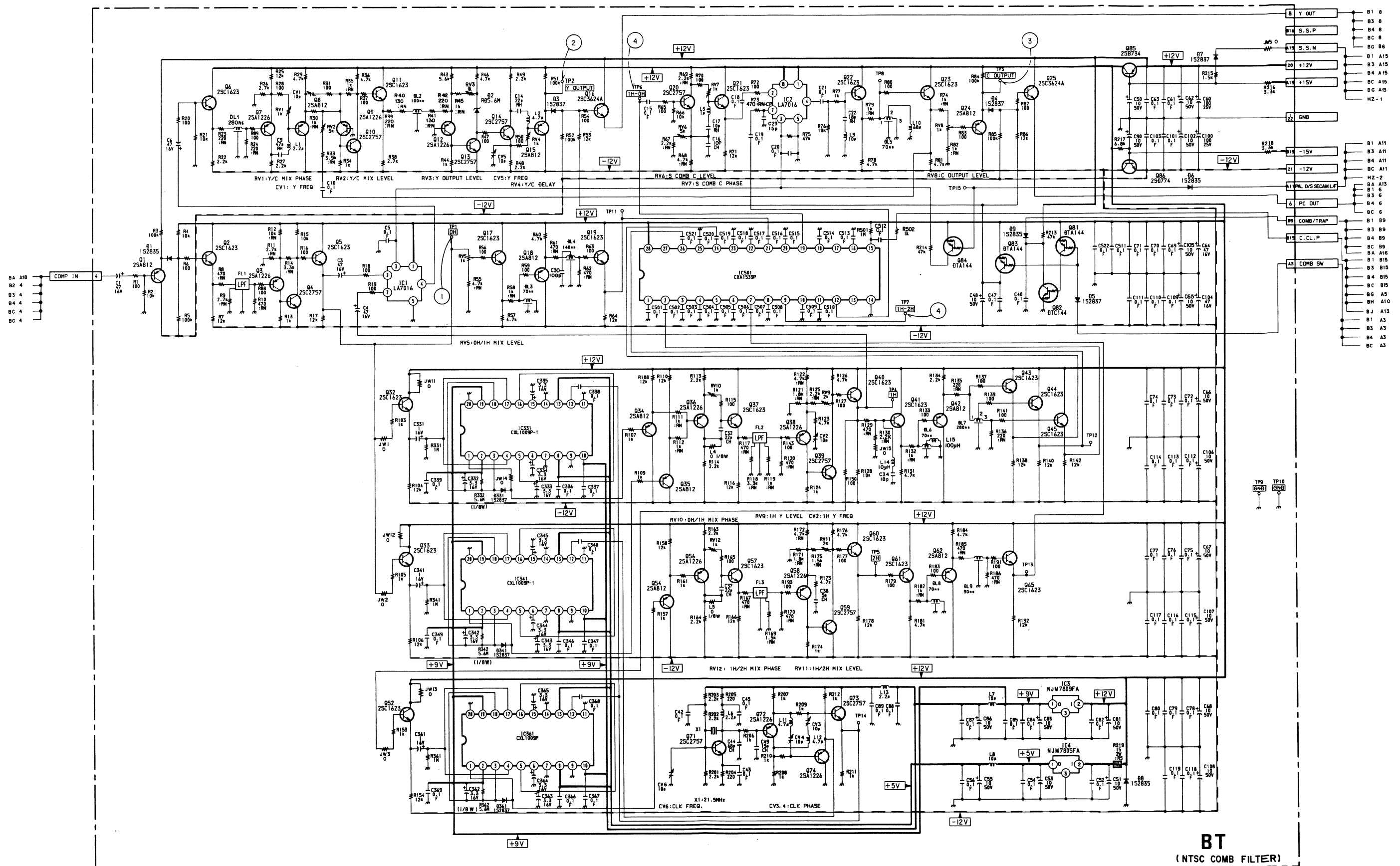
② 0.95 Vp-p(H)



③ 0.58 Vp-p(H)

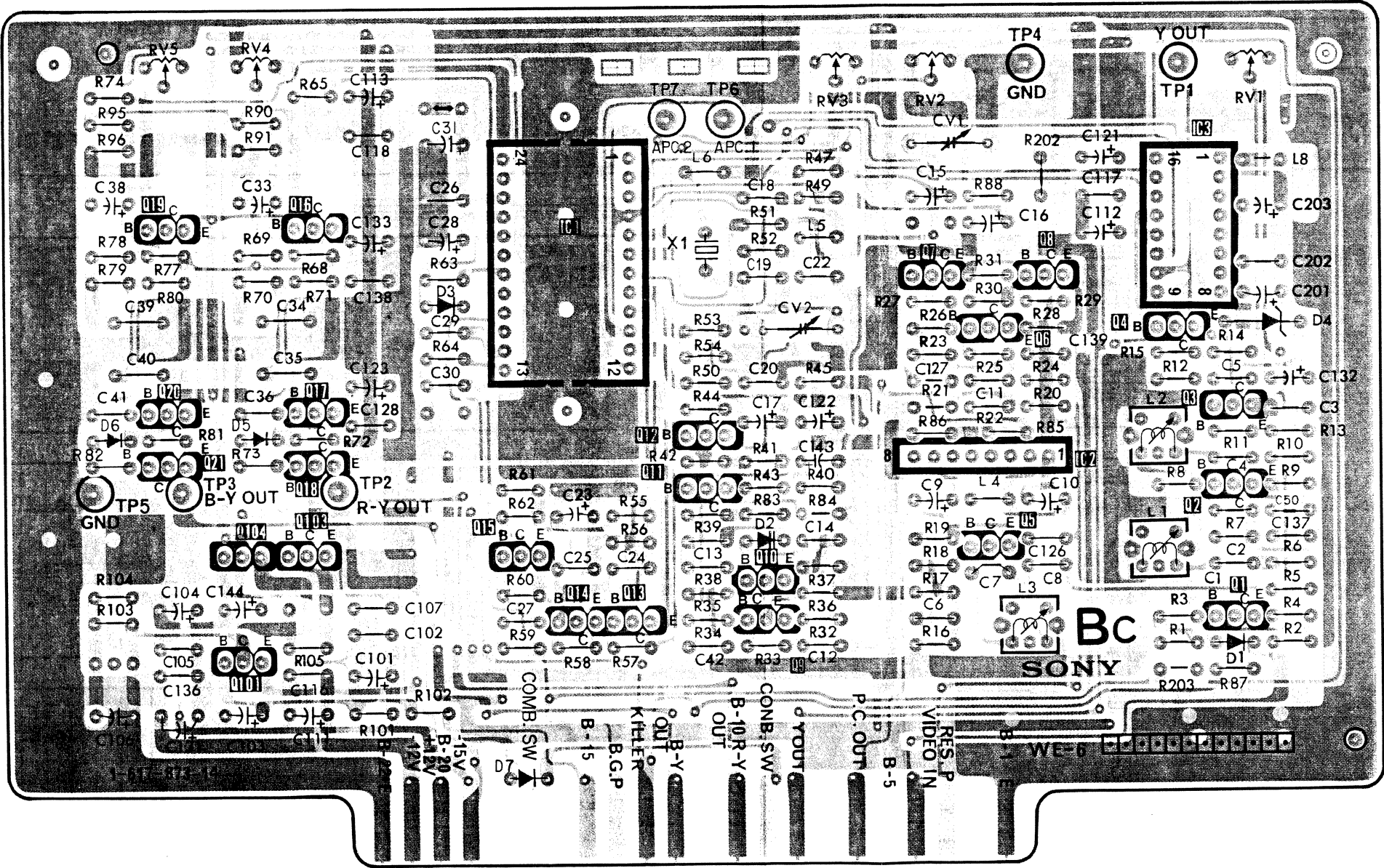
④ 1.9 Vp-p(H)

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF) (BVM-1311 ONLY)

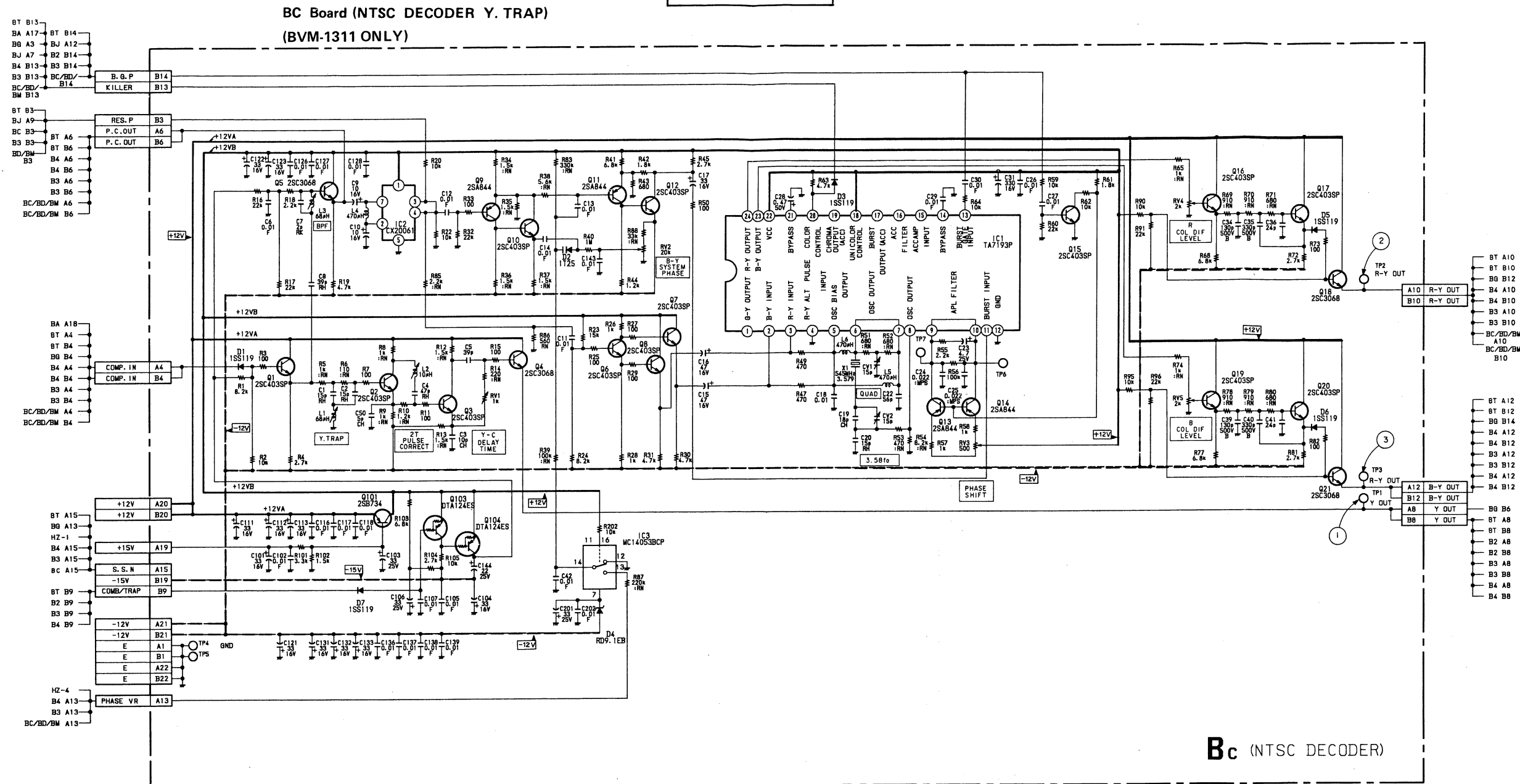


BC Board (NTSC DECODER Y. TRAP) (BVM-1311 ONLY)

IC	1										2		3		
Q	19 20 21	16 17 18		15			12 11	10 9	7		6	8	4	3 2 1	
D	6	5	3		7			2	RV3		RV2	TP4	1		
TP	RV5	RV4	TP7		TP6	CV2		RV3	RV2	CV1	TP4	TP1		RV1	
ADJ	TP5	TP3	TP2												



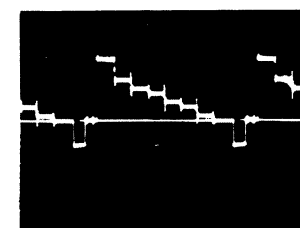
• : Pattern from the side which enables seeing.
• : Pattern of the rear side.



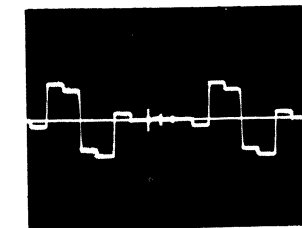
BC BOARD

IC1	TA7193P	DEMULATOR
2	CX20061	RESIDUAL SWITCH
3	MC14053BCP	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

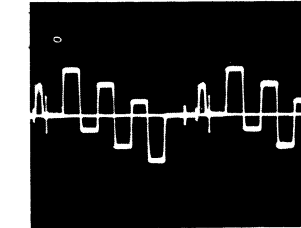
14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB3	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



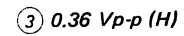
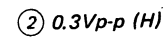
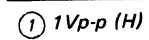
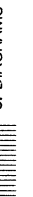
① 1Vp-p (H)



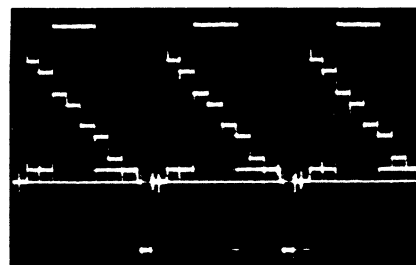
② 0.3Vp-p (H)



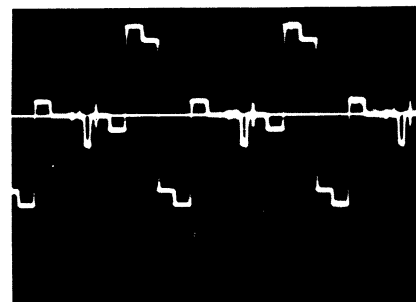
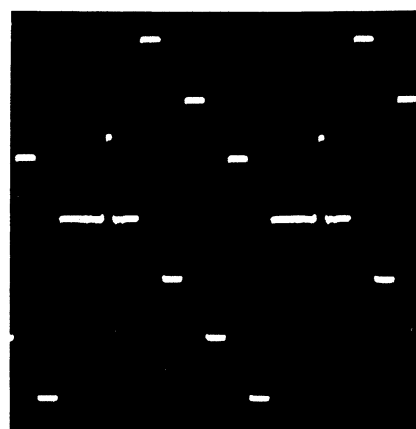
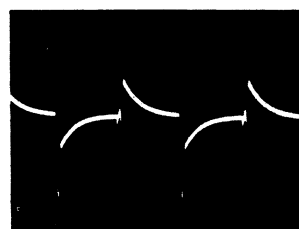
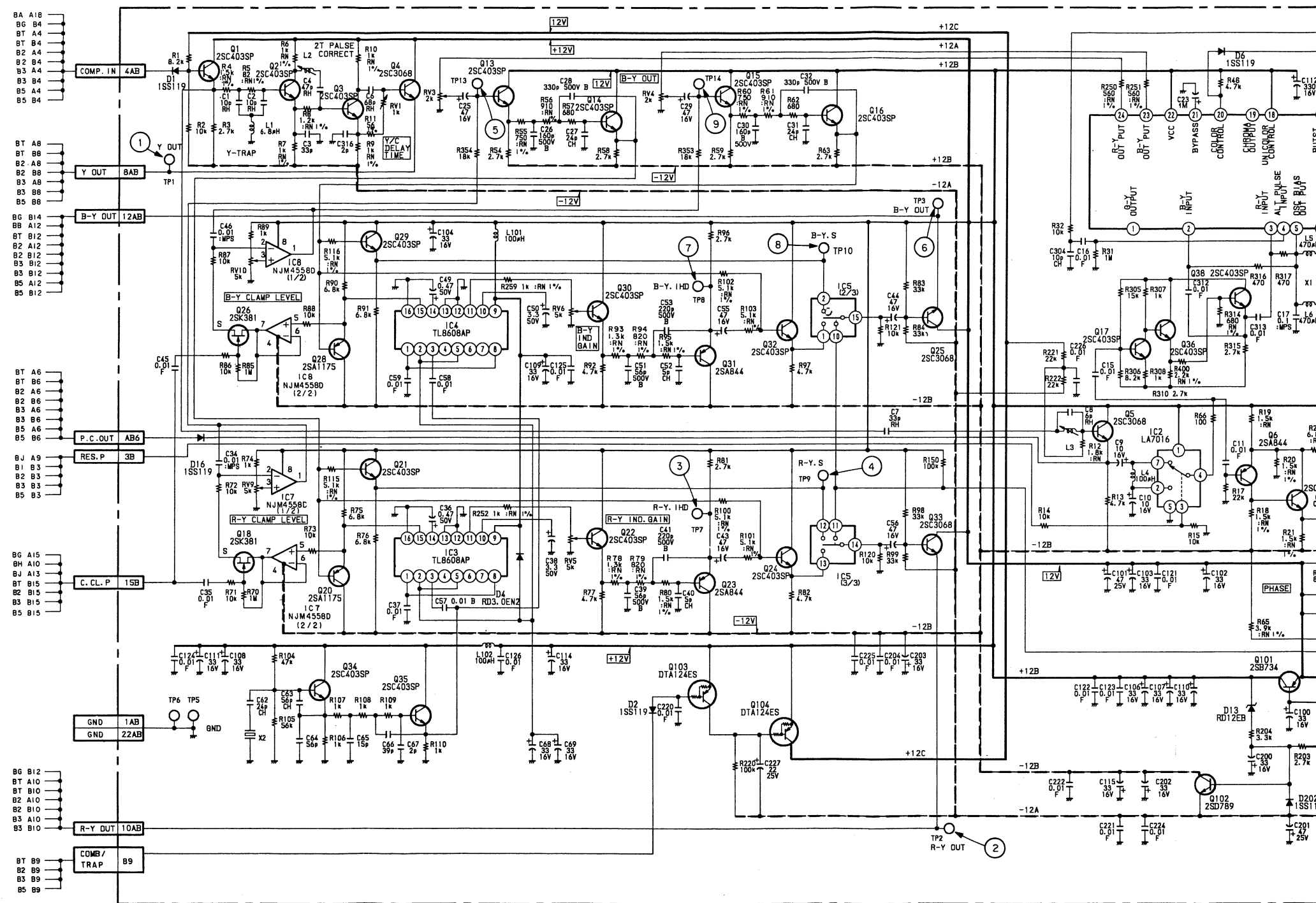
③ 0.36Vp-p (H)



BD board (PAL DECODER Y.TRAP) (BVM-1411P ONLY)



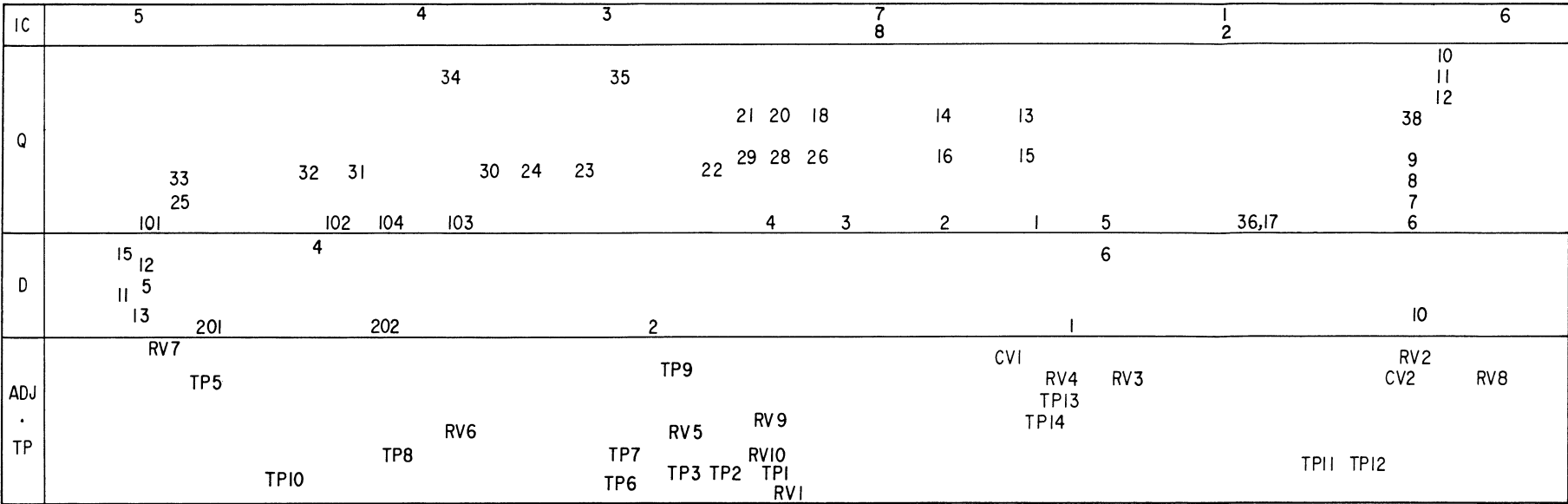
① 1Vp-p (H)

② 0.3Vp-p ④ 0.32Vp-p
③ 0.32Vp-p ⑤ 0.36Vp-p⑥ 0.38Vp-p ⑧ 0.39Vp-p
⑦ 0.38Vp-p ⑨ 0.42Vp-p⑩ 0.26Vp-p (H)
⑪ 0.26Vp-p (H)

BD

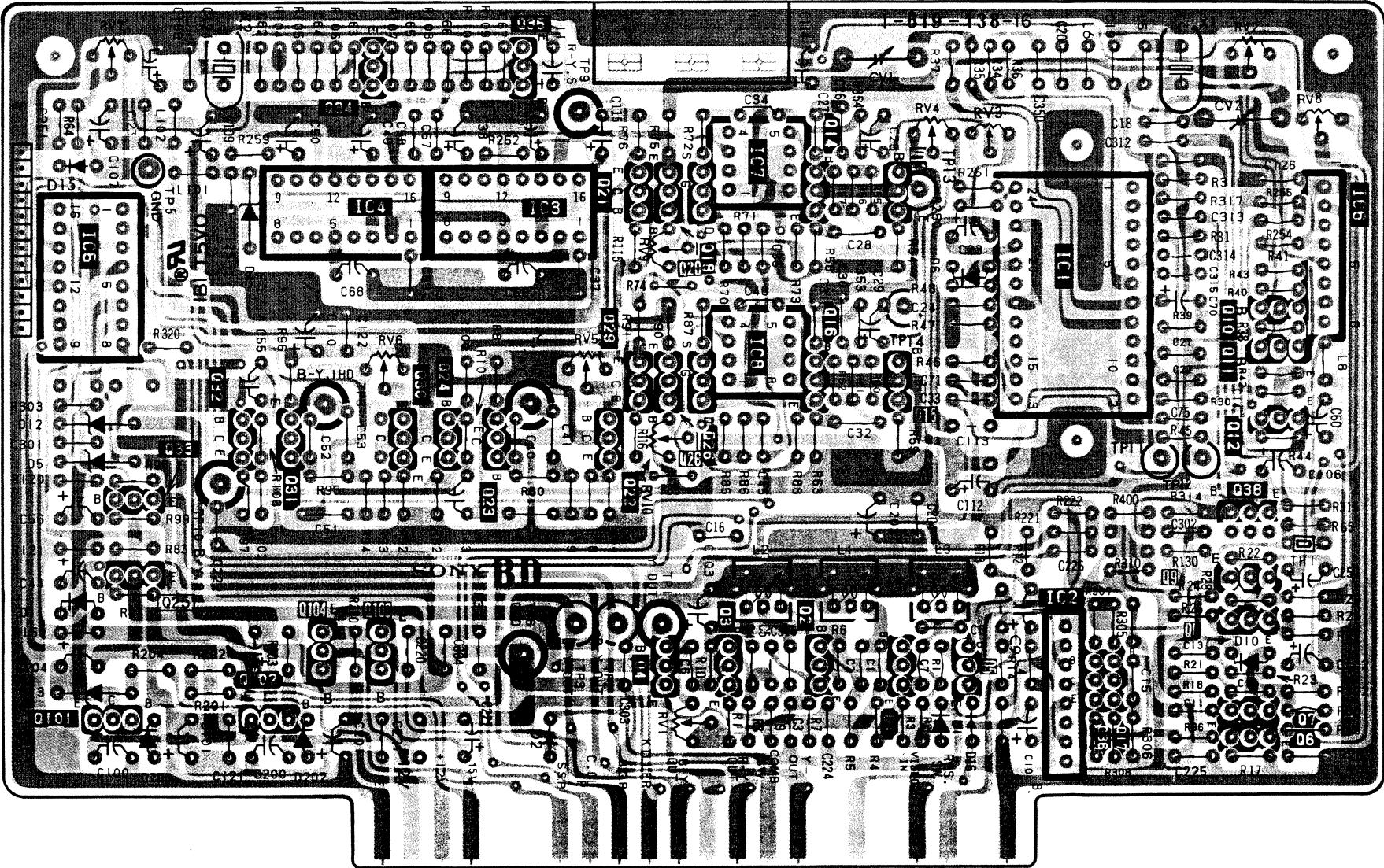


BD board (PAL DECODER Y. TRAP) (BVM-1411P ONLY)



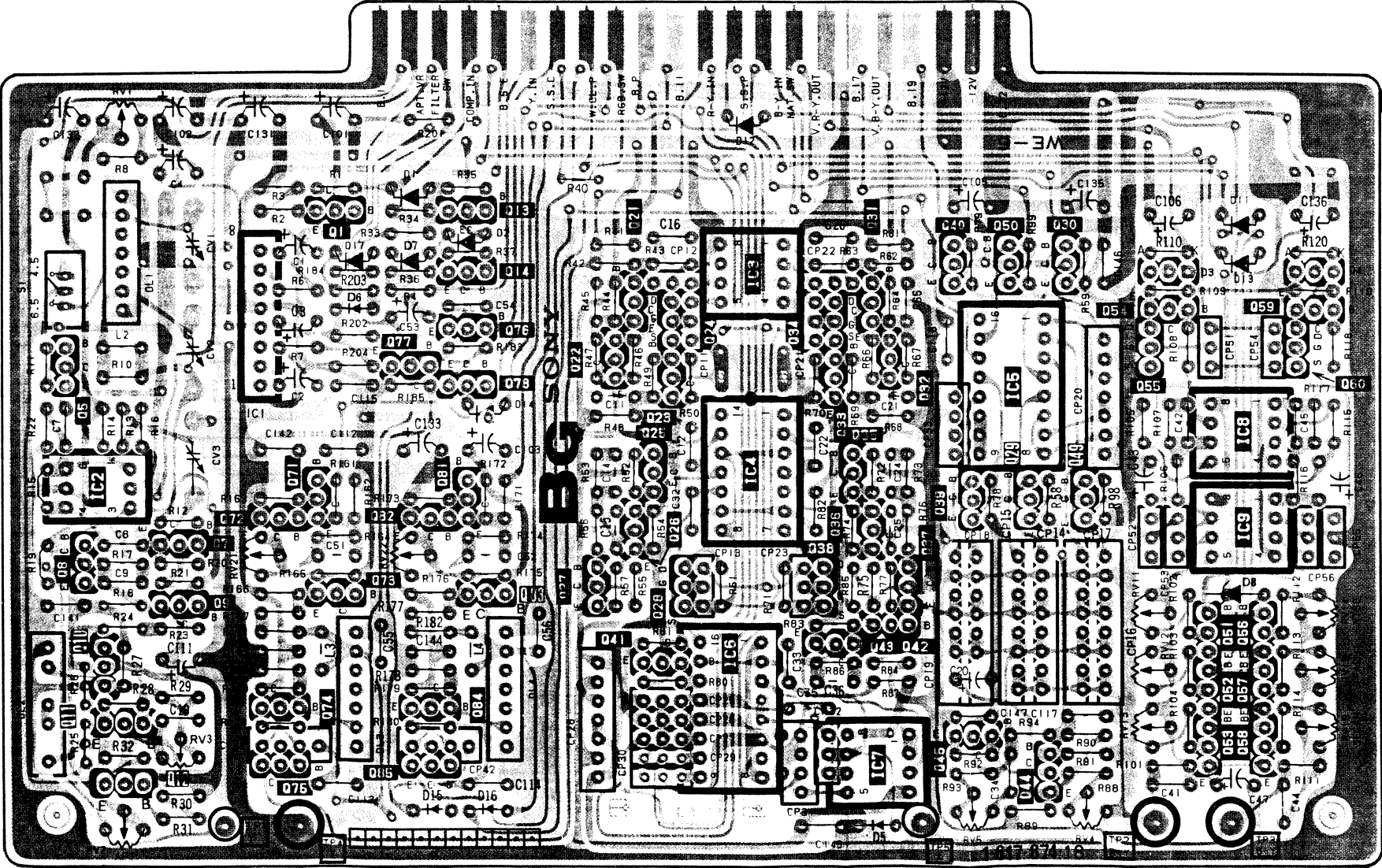
BD BOARD

IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	MC14053BCP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	NJM4558P	R-Y CLAMP
8	NJM4558P	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTOR
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC403SP	PHASE CONTROLLER
8	NJM4558P	PHASE CONT. AMP.
9	NJM4558P	PHASE CONT. AMP.
10	2SA1175	APL FILTER
11	2SA1175	APL FILTER
12	2SC403SP	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC403SP	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA1175	BUFFER
21	2SC403SP	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC403SP	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA1175	BUFFER
29	2SC403SP	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC403SP	BUFFER
33	2SC3068	BUFFER
34	2SC403SP	CCD CLOCK GEN
35	2SC403SP	CCD CLOCK GEN
36	2SC403SP	BUFFER
38	2SC403SP	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD789	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EB1	CCD BIAS
5	RD9.1EB2	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR



BG board (COLOR GAIN CONTROL, COMPONENT R-Y/B-Y AMP & DELAY, APERTURE CONTROL,
Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

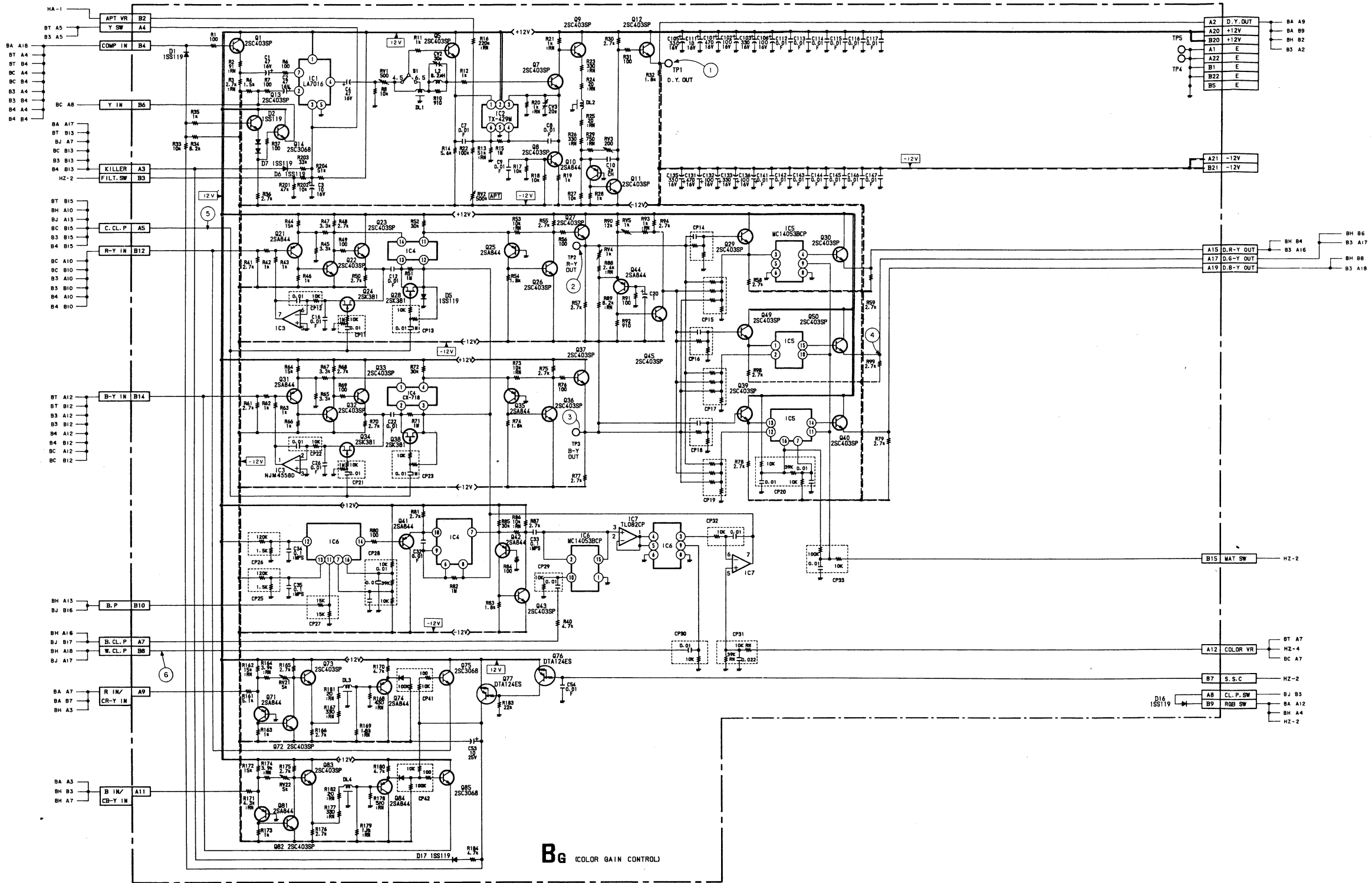
IC	134567															
Q	113147621243431324050305810772718281222335363929491112747584852726252841384342374544															
D	176177214125															
TP	RV1															
ADJ	CV2CV3RV3RV21RV22RV11RV12RV13RV14RV15RV16TP1TP2TP3TP4TP5RV4RV5RV6															



-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BG board (COLOR GAIN CONTROL, COMPONENT R-Y/B-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

BG B

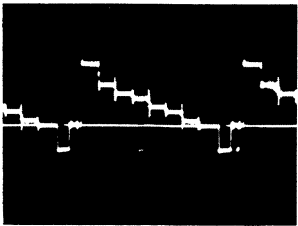


BG BOARD

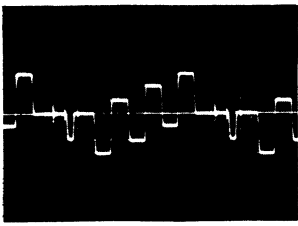
IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	MC14053BCP	MATRIX SW
6	MC14053BCP	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	BUFF
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL

Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER

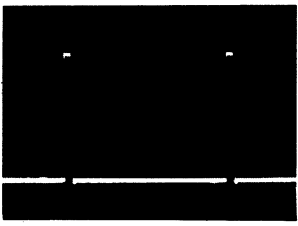
5. DIAGRAMS



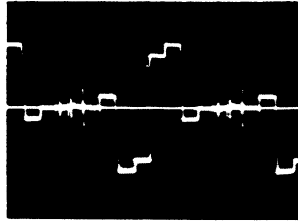
① 1Vp-p (H)



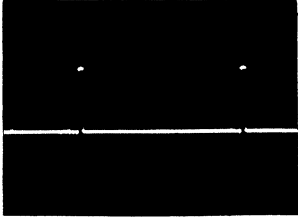
③ 1.6Vp-p (H)



⑤ 5Vp-p (H)



② 1.4Vp-p (H)

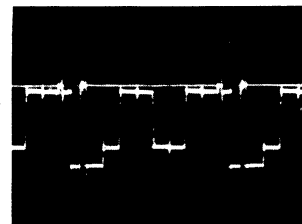


⑥ 6Vp-p (H)

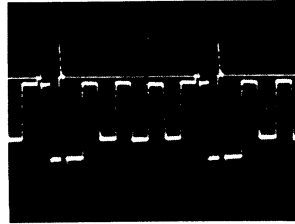
BH BOARD

IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)		AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(2/4)	MC14081BCP	Y SCREENING PULSE GEN
(4/4)		AGC PULSE, SET UP, WHITE, VITC INSERT GEN
12	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	MC14001BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF

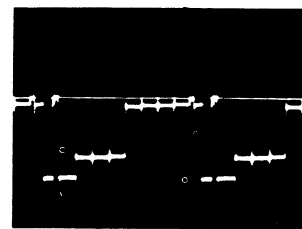
Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT



① 0.8Vp-p (H)

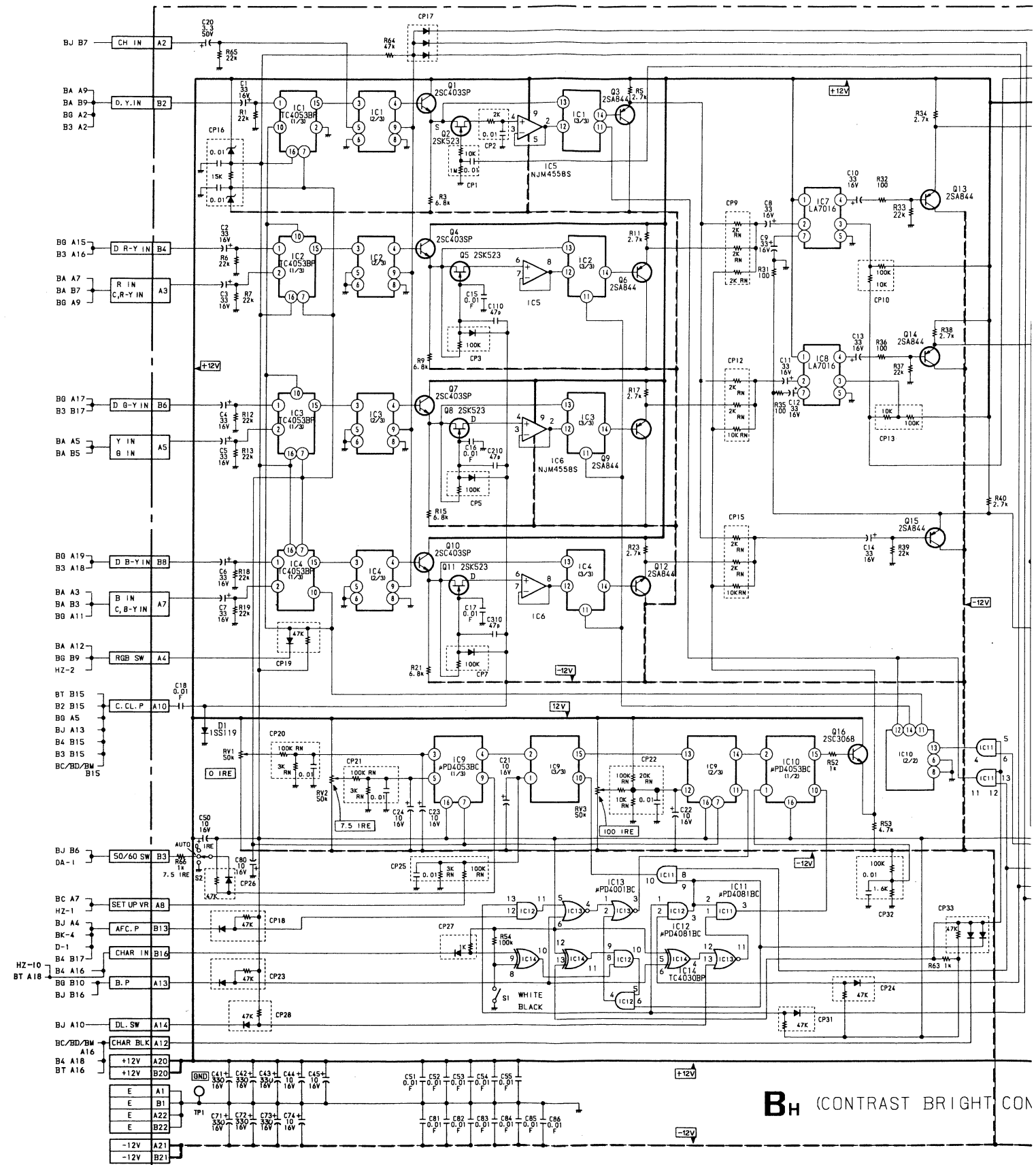


③ 0.7Vp-p (H)



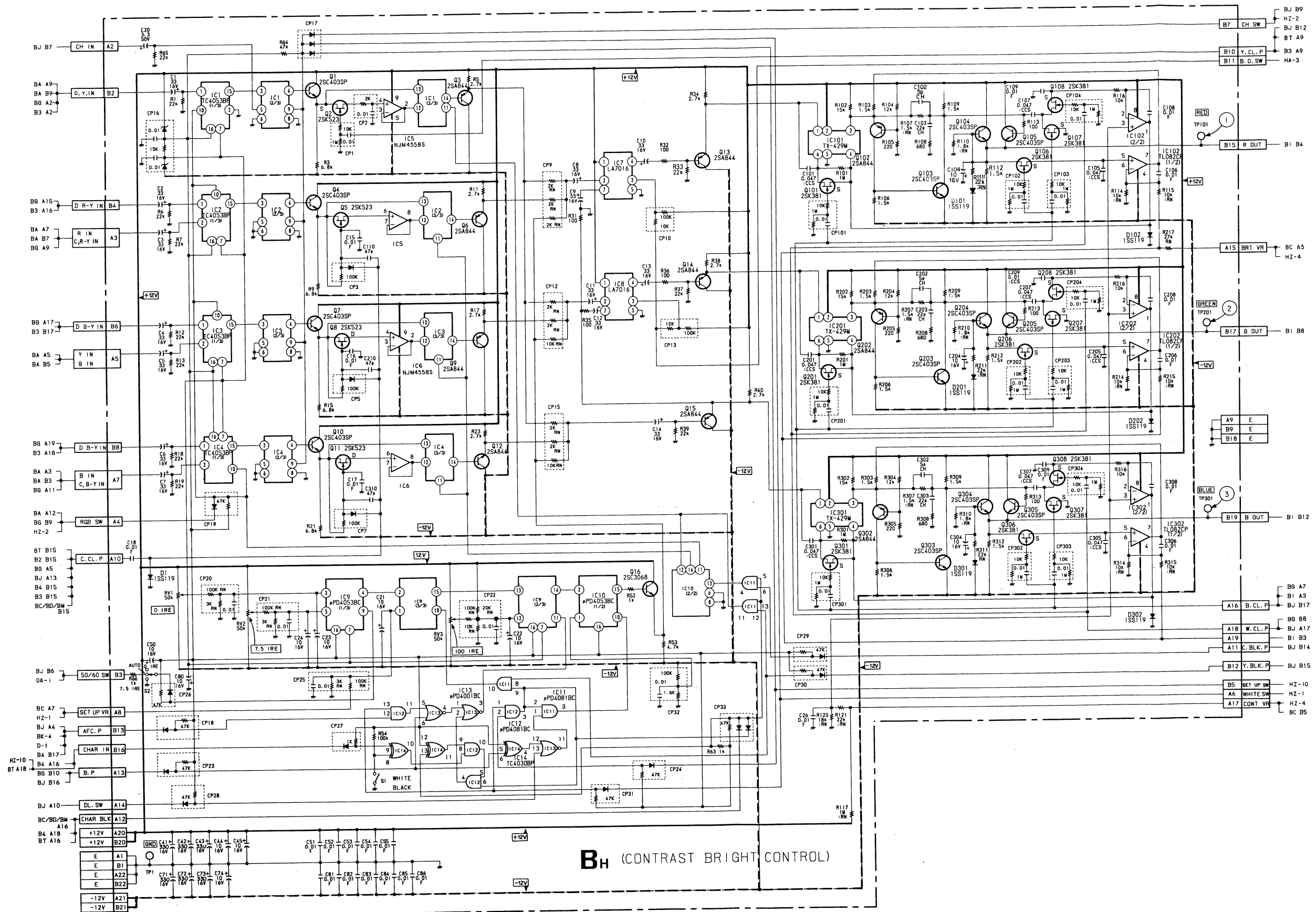
② 0.8Vp-p (H)

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



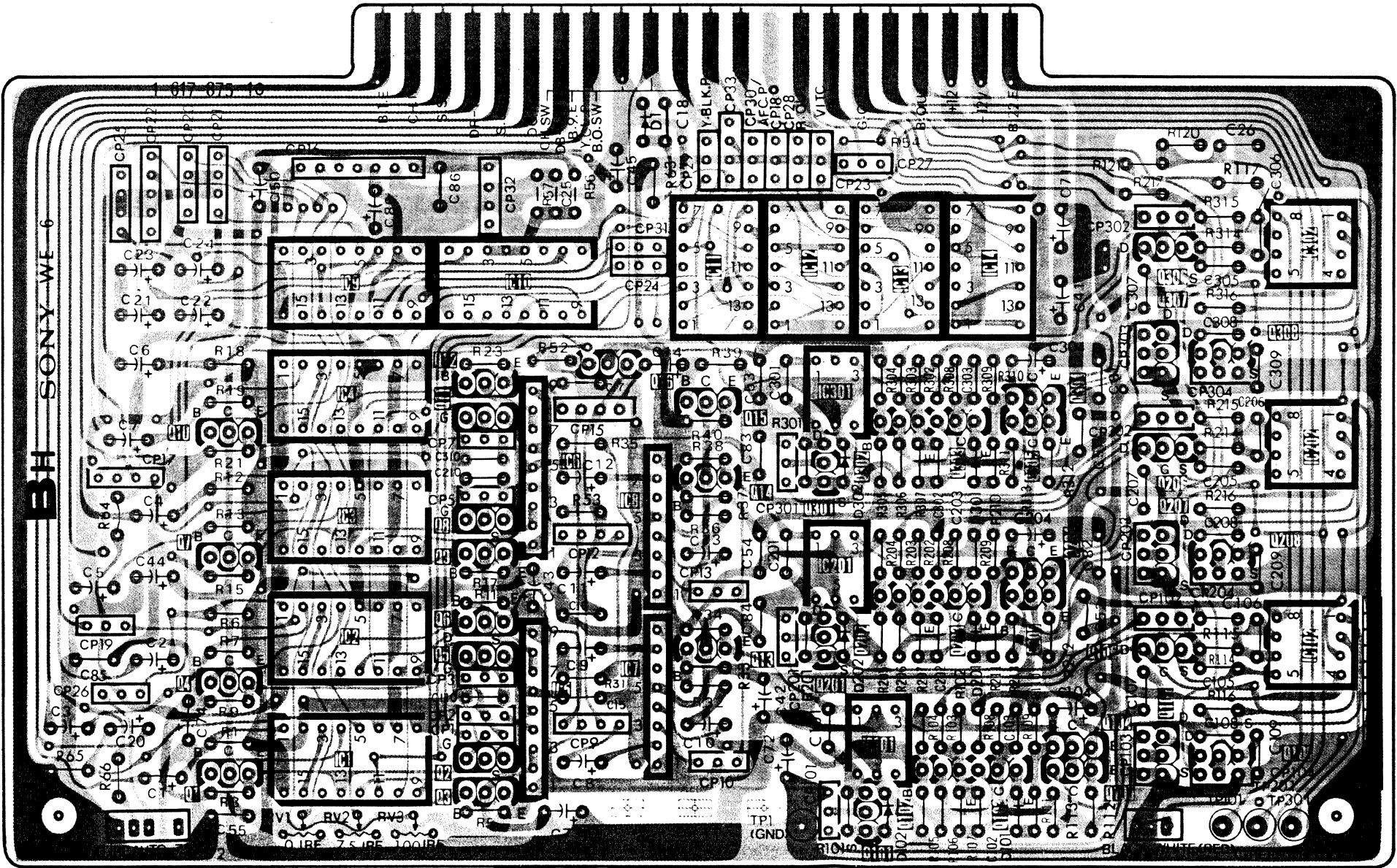
BH (CONTRAST BRIGHT CON

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

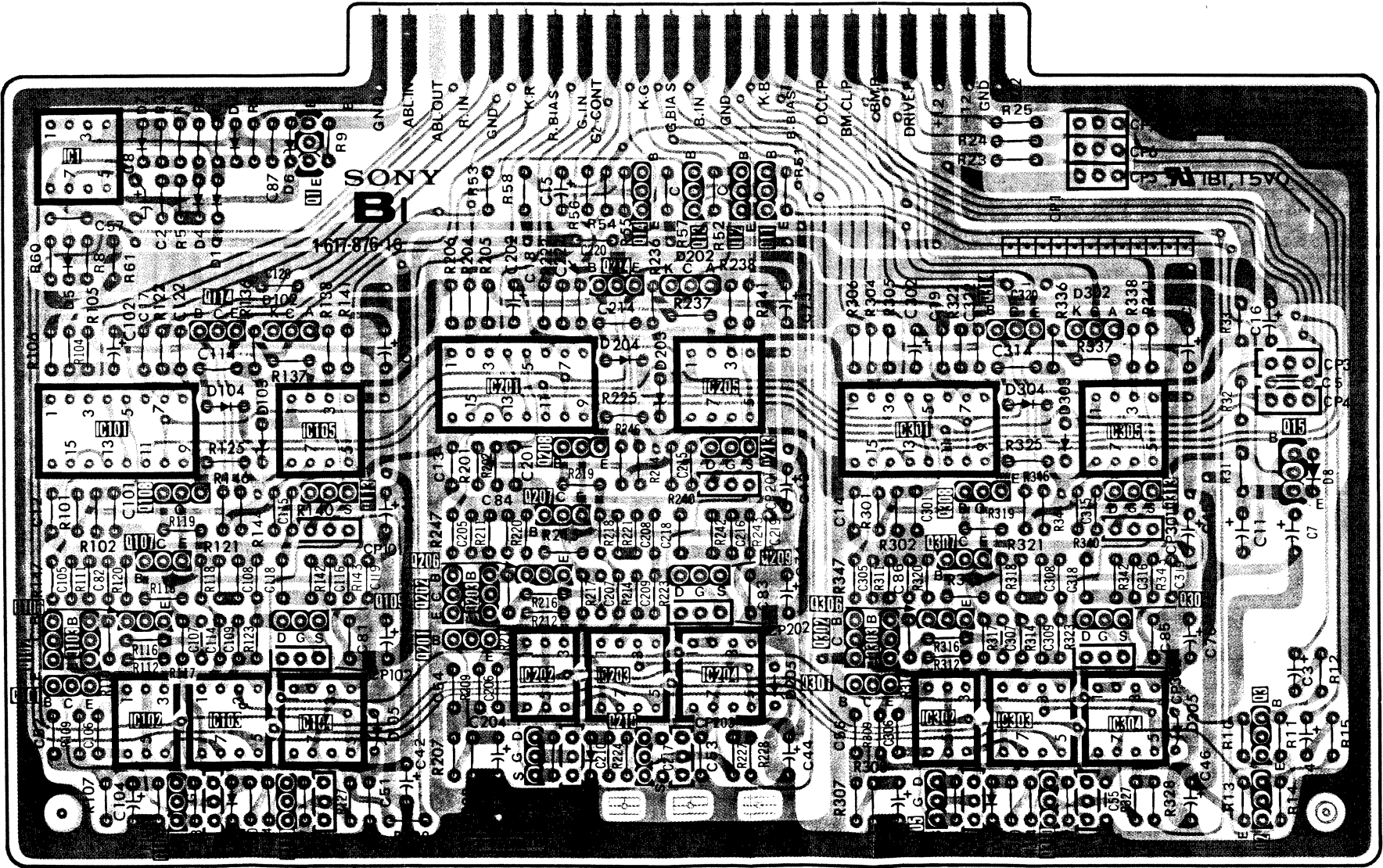
IC	9				10		11		12	13	14	102	
	4	3	2	1	6	5	8	7	301	201	101	202	302
Q	10				12		16		15		304		306
	7				11		11		14		302		307 308
	4				8		9		13		303		206
	1				6		5		201		202		207 208
D					3		1		101		102		106
											103		104 105
TP												TP201	
ADJ		RV1 RV2 RV3						TP1				TP101 TP301	



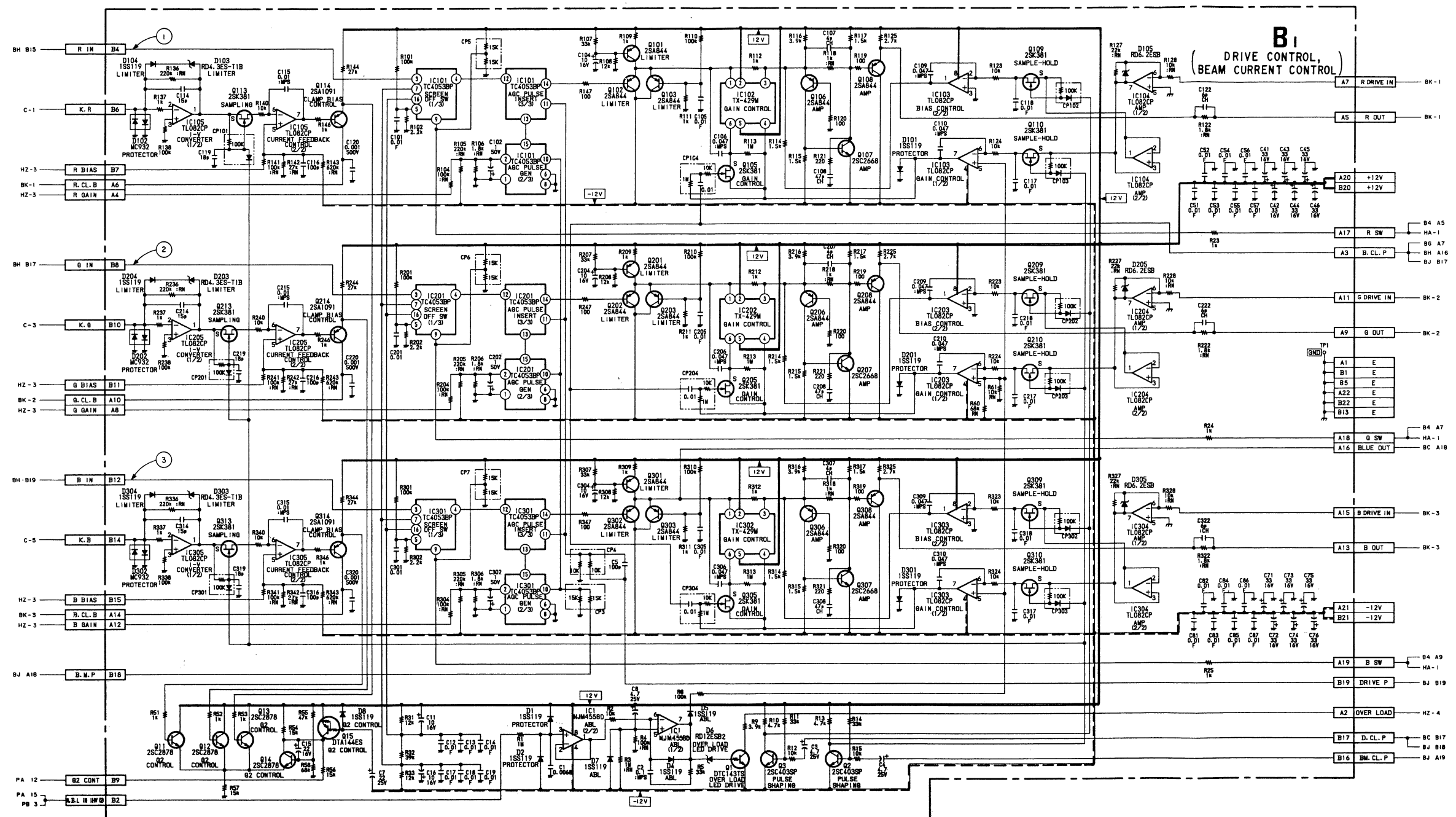
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	101									
	102	103	104	201	202	203	204	301	302	303
Q	108	114	113	208	214	213	314	308	313	15
	107			207				307		
D	102	103	106	202	203	206	209	302	303	306
	101	105	109	201	205	210		301	305	310
TP	7	2	6	204	202	203	304	302	303	305
	5	4	104	201	205					
TP I										



-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

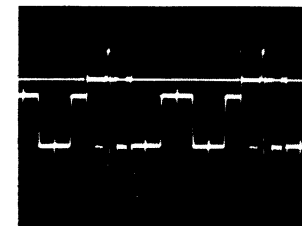


BI BOARD

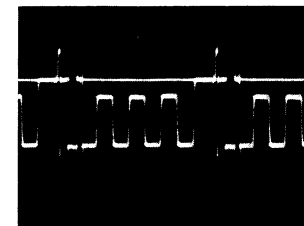
IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
Q1	DTC143TS	OVER LOAD LED DRIVE
2	2SC403SP	PULSE SHAPING
3	2SC403SP	PULSE SHAPING
11	2SC2878	G2 CONTROL
12	2SC2878	G2 CONTROL
13	2SC2878	G2 CONTROL
14	2SC2878	G2 CONTROL
15	DTA144ES	G2 CONTROL
101	2SA844	LIMITER
102	2SA844	LIMITER
103	2SA844	LIMITER
105	2SK381	GAIN CONTROL
106	2SA844	AMP
107	2SC2668	AMP
108	2SA844	AMP
109	2SK381	SAMPLE-HOLD

Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	HC932	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
D105	RD6.2ESB	LIMITER
201	1SS119	PROTECTOR
202	HC932	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
D205	RD6.2ESB	LIMITER
301	1SS119	PROTECTOR
302	HC932	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
D305	RD6.2ESB	LIMITER

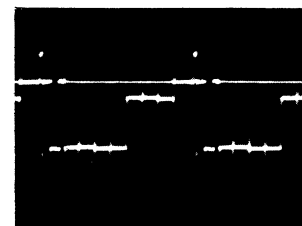
5. DIAGRAMS



① 1.0Vp-p(H)



③ 1.0Vp-p(H)

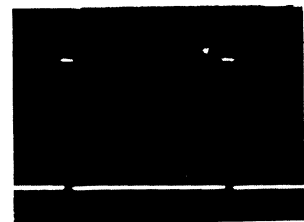


② 1.0Vp-p(H)

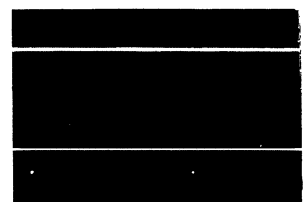
BJ board (SYNC PROCESSING & PULSE GEN)

IC1	HD14538BP	PIC.SET.PULSE GEN
2	MC14001BCP	CROSS HATCH GEN
3	TC4040BP	V SYNC & DELAY
4	TC4040BP	V COUNT
5	TC504027BP	V SYNC & DELAY
6(1/2)	TC504027BP	CHROMA CLAMP PULSE GEN
(2/2)	TC504027BP	2FH MULTI
7	TC504027BP	V COUNT
8	TC504027BP	1H PULSE PROCESS
9(1/2)	TC504027BP	V SYNC & DELAY
(2/2)	TC504027BP	1H PULSE PROCESS
10(1/2)	HD14538BP	B.G.P GEN 2
(2/2)	HD14538BP	H CYCLE
11(1/2)	HD14538BP	CROSS HATCH GEN
(2/2)	HD14538BP	SPLIT Y BLK, C BLK PULSE GEN
12	HD14538BP	Y CYCLE AGC & CLAMP PULSE GEN
13(1/4)	MC14001BCP	CHROMA CLAMP PULSE GEN
(2/4)	MC14001BCP	Y.CL.P GEN
(3/4)	MC14001BCP	B.G.P GEN 2
(4/4)	MC14001BCP	RESIDUAL PULSE GEN
14(1/4)	MC14001BCP	SPLIT Y BLK: C BLK PULSE GEN
(3/4)	MC14001BCP	V CYCLY AGC & CLAMP PULSE GEN
(4/4)	MC14001BCP	V CYCLE AGC & CLAMP PULSE GEN
15	MC14071BCP	CROSS HATCH GEN
16(1/4)	MC14011BCP	Y CYCLE AGC & CLAMP PULSE GEN
(2/4)	MC14011BCP	H OR V BLK, P
(3/4)	MC14011BCP	SPLIT Y BLK, C BLK PULSE GEN
(4/4)	MC14011BCP	CROSS HATCH GEN
17	MC14011BCP	CROSS HATCH GEN
18	TC4023BP	CROSS HATCH GEN
19(1/4)	MC14081BCP	V COUNT
(2/4)	MC14081BCP	V SYNC & DELAY
(3/4)	MC14081BCP	2FH MULTI
(4/4)	MC14081BCP	1H PULSE PROCESS
20	MC14081BCP	V COUNT
21(1/4)	MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
(2/4)	MC14071BCP	V SYNC & DELAY
(3/4)	MC14071BCP	V COUNT
(4/4)	MC14071BCP	2FH MULTI
22(1/4)	MC14071BCP	V COUNT
(2/4)	MC14071BCP	V SYNC & DELAY
(3/4)	MC14071BCP	V COUNT
(4/4)	MC14071BCP	V SYNC & DELAY

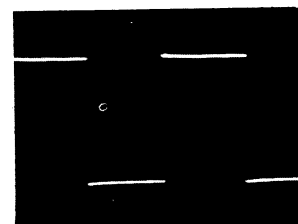
IC23(1/3)	TC4073BP	V SYNC & DELAY
(2/3)	TC4073BP	V COUNT
(3/3)	TC4073BP	V SYNC & DELAY
24(1/3)	MC14069UBCP	CROSS HATCH GEN
(2/3)	MC14069UBCP	V COUNT
(3/3)	MC14069UBCP	1H PULSE PROCESS
(4/3)	MC14069UBCP	INV
25(1/6)	MC14069UBCP	H OR V BLK.P
(2/6)	MC14069UBCP	Y CYCLE AGC & CLAMP PULSE GEN
(3/6)	MC14069UBCP	CROSS HATCH GEN
(4/6)	MC14069UBCP	1H PULSE PROCESS
(5/6)	MC14069UBCP	CLAMP PULSE CHANGE SW
(6/6)	MC14069UBCP	CROSS HATCH GEN
26	HC14175BCP	CROSS HATCH GEN
27(1/3)	MC14053BCP	H OR V DL SW
(2/3)	MC14053BCP	CROSS HATCH GEN
(3/3)	MC14053BCP	CROSS HATCH GEN
28	TC4520BP	B.G.P GEN 1
29(1/2)	HD14538BP	Y.CL.P GEN
(2/2)	HD14538BP	Y.CL.P GEN
Q14	2SC2785	CROSS HATCH GEN
15	2SC2785	Y.CL.P GEN
16	2SC2785	Y.CL.P GEN
17	2SC2785	CHROMA CLAMP PULSE GEN
18	2SC2785	CHROMA CLAMP PULSE GEN
19	2SA1115	H CYCLE
20	2SC2785	H CYCLE
21	2SC2785	H CYCLE
22	2SC2785	H CYCLE
23	2SA1048	H CYCLE
24	2SC2785	H CYCLE
25	2SC2785	CHROMA CLAMP PULSE GEN
26	2SC2785	Y.CL.P GEN
D1	1SS119	CROSS HATCH GEN
2	1SS119	H CYCLE
3	1SS119	H CYCLE
7	1SS119	1H PULSE PROCESS
8	1SS119	V SYNC & DELAY
9	1SS119	2FH MULTI
11	MC932	PROT



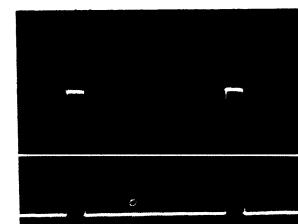
1 12Vp-p (H)
2 12Vp-p (H)



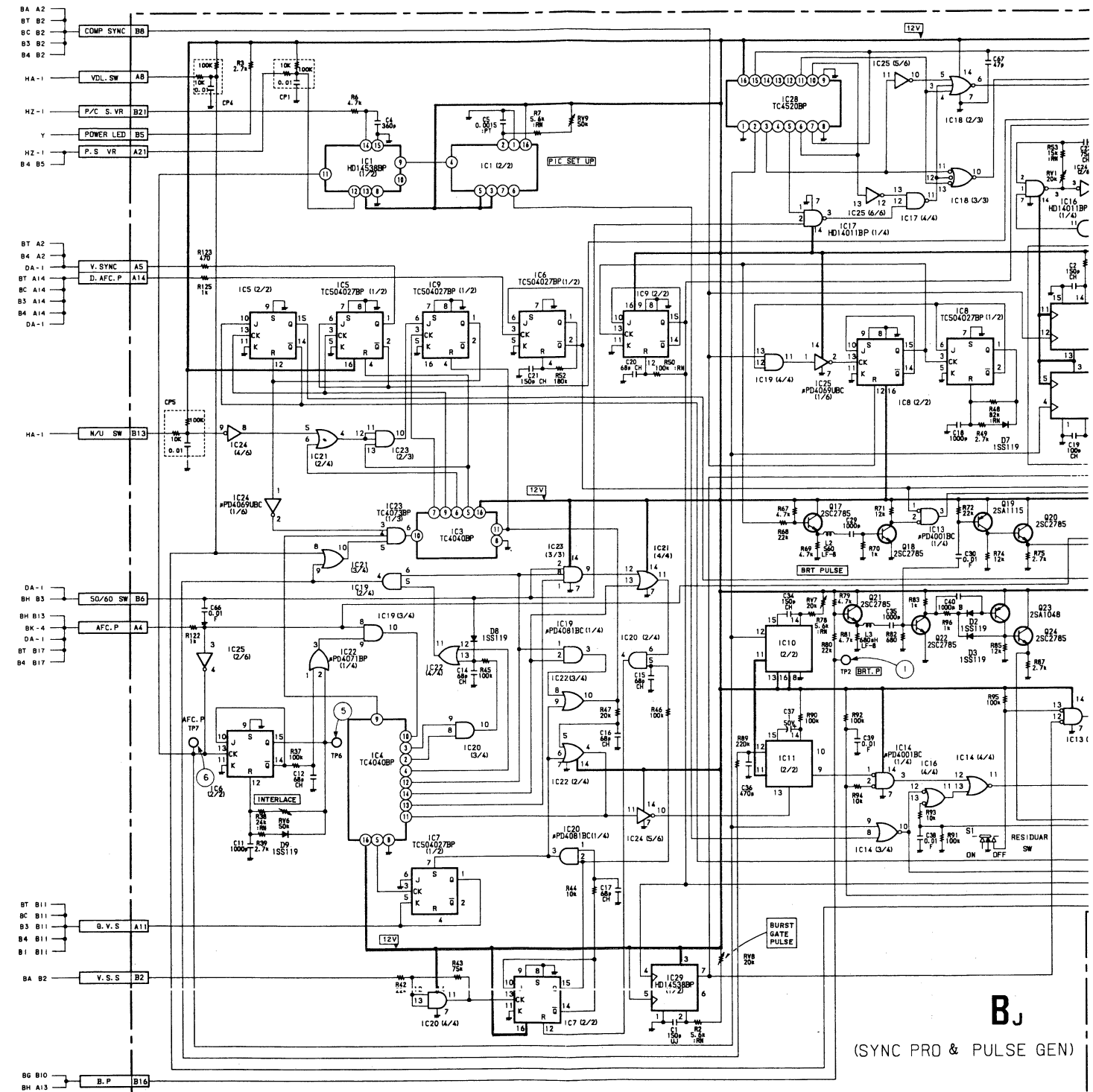
3 12Vp-p (V)



4 12Vp-p (H)
5 12Vp-p (H)



6 12Vp-p (H)

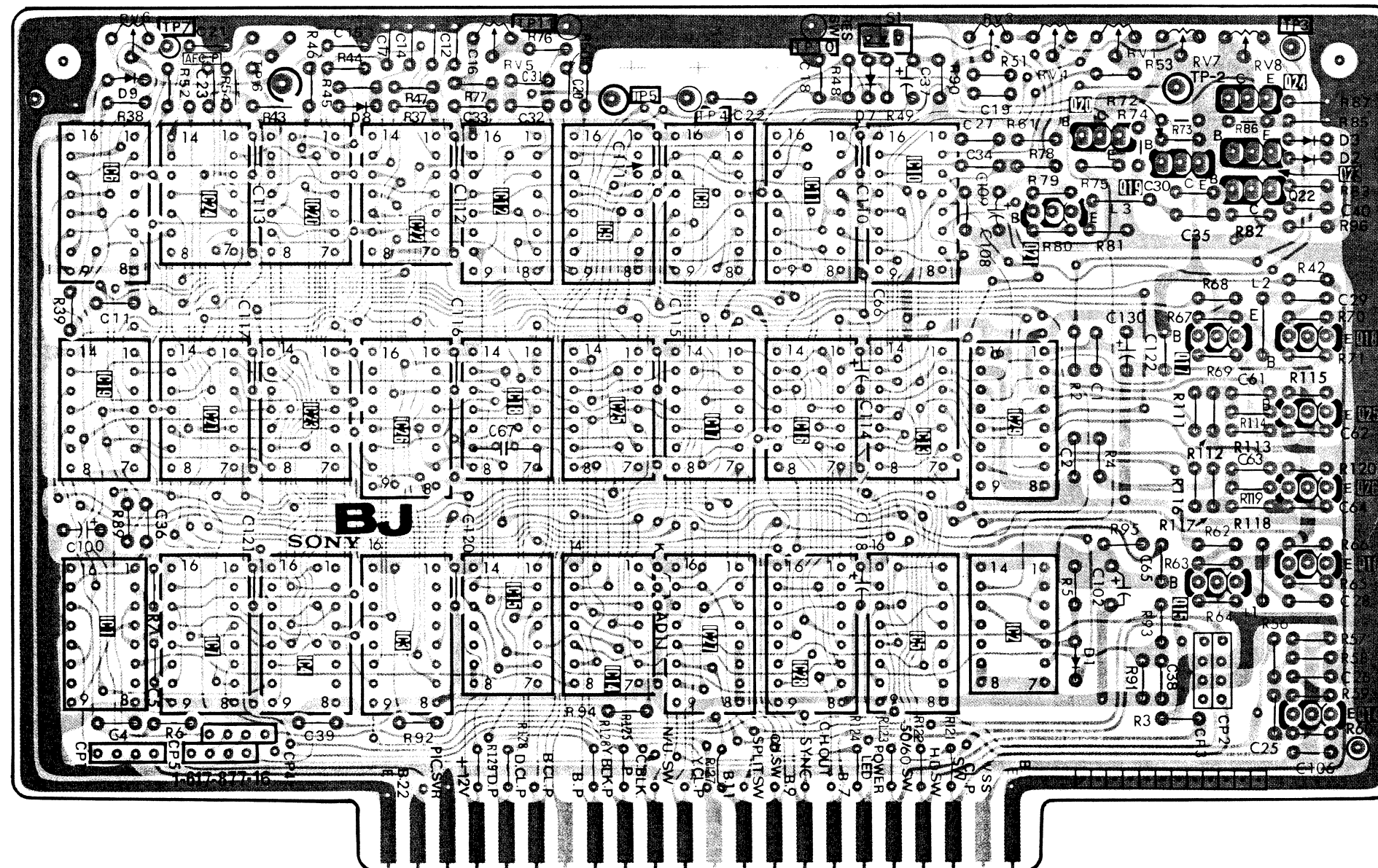


BJ board (SYNC PROCESSING & PULSE GEN)



BJ board (SYNC PROCESSING & PULSE GEN)

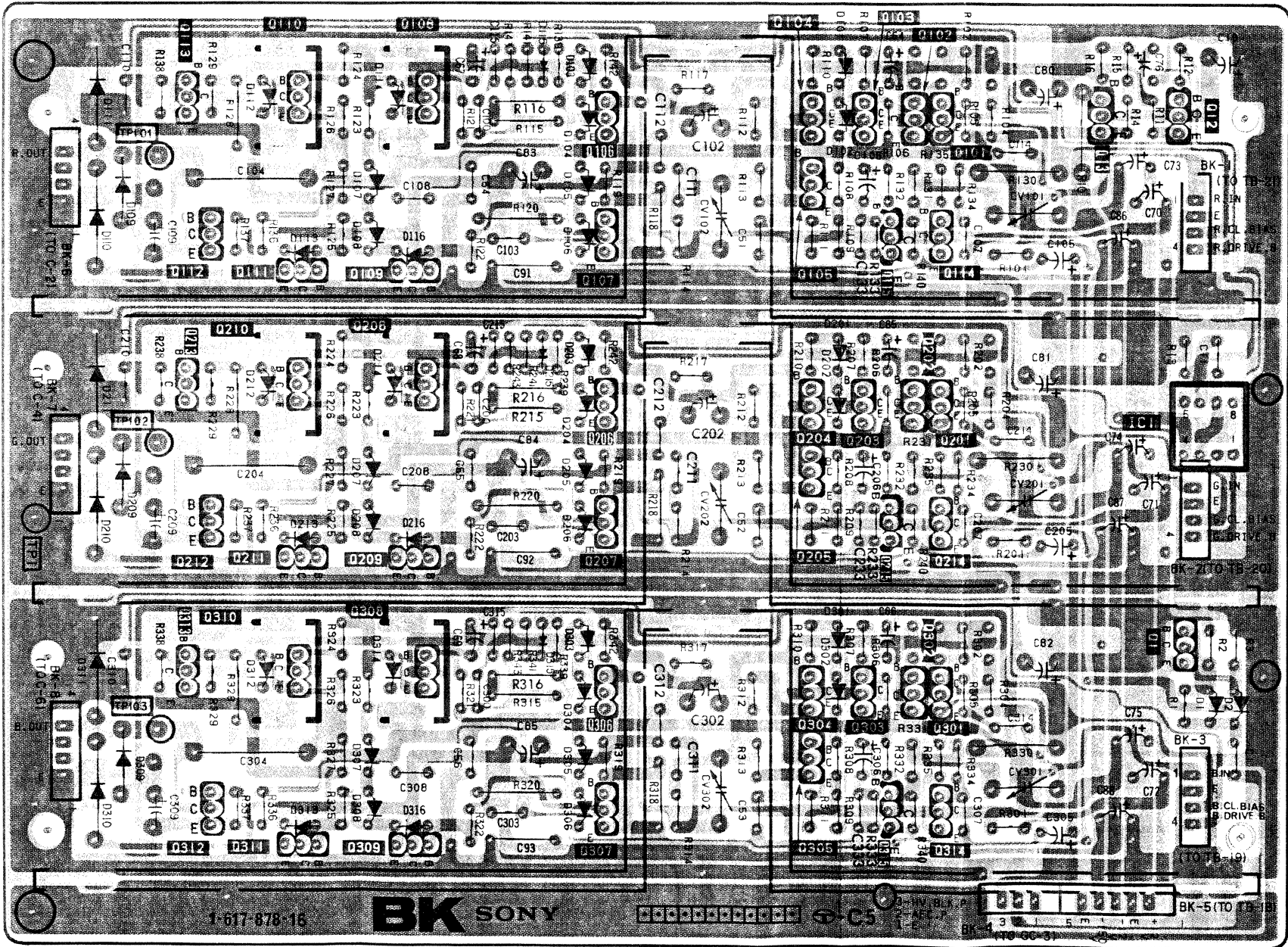
IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2					
Q											20	19	24 23 22	17	18 25 26 16 14
D	9	8			7					3 2					
TP ADJ	RV6	TP7	TP6	RV5	TP11	TP5	TP4	TP10	RV3	RV4	RV1	RV7 TP2	RV8	TP3	



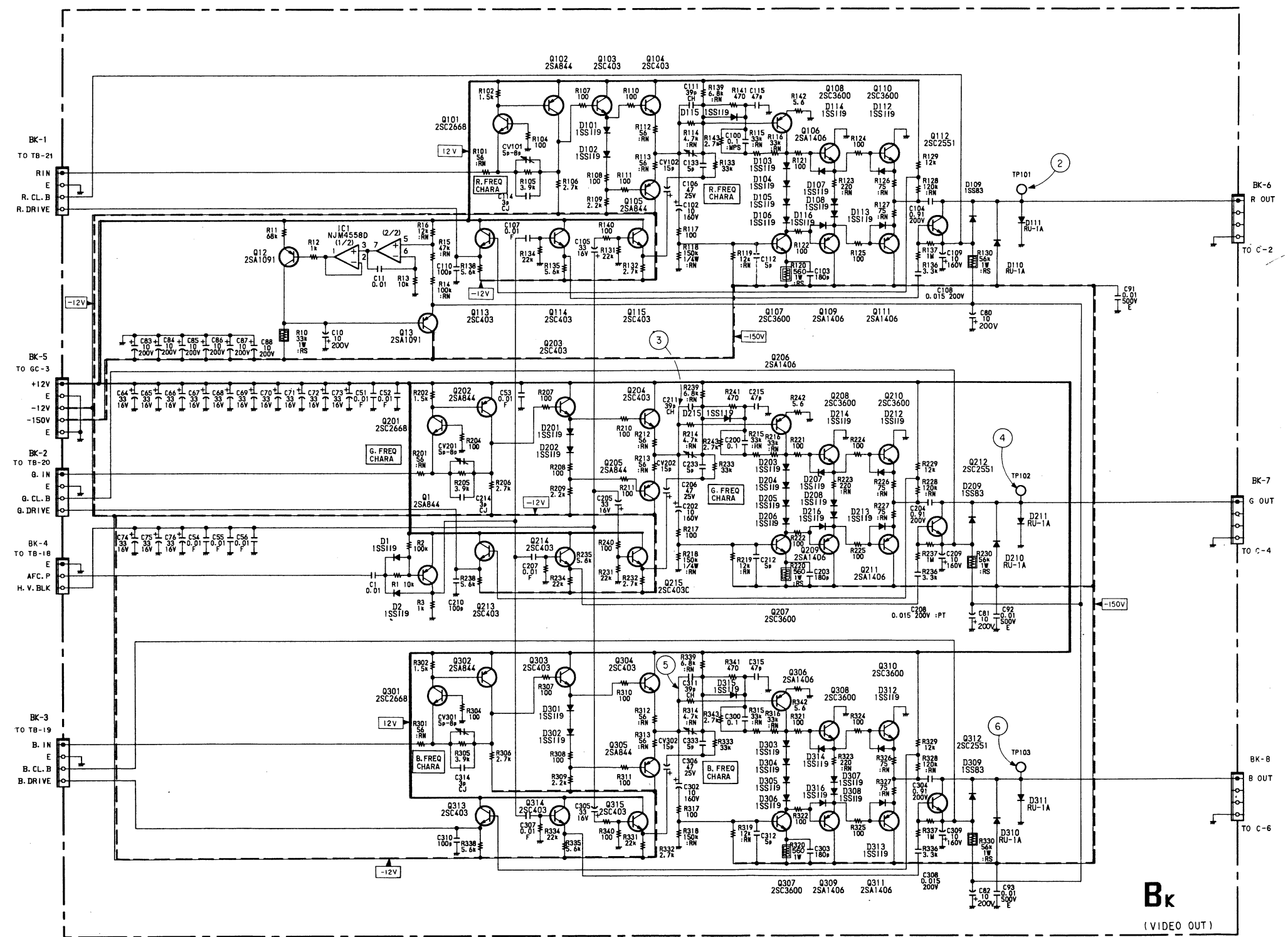
- : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BK board (VIDEO OUT AMP)

IC																	I
Q		113		110		108		106		104	103	102	101		13	12	
		112		111		109		107		105	115	114					
		213		210		208		206		204	203	202	201				
		212		211		209		207		205	215	214					
		313		310		308		306		304	303	302	301				I
		312		311		309		307		305	315	314					
D		111	109		112	107	114		115	104	103		101				
		110			113	108	116			106	105		102				
		211			212	207	214		215	204	203		201				
		210	209		213	208	216			206	205		202				
		311			312	307	314		315	304	303		301				
		310	309		313	308	316			306	305		302				I 2
TP		TP101							CV102				CV101				
ADJ	TPI	TP102							CV202				CV201				
		TP103							CV302				CV301				



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

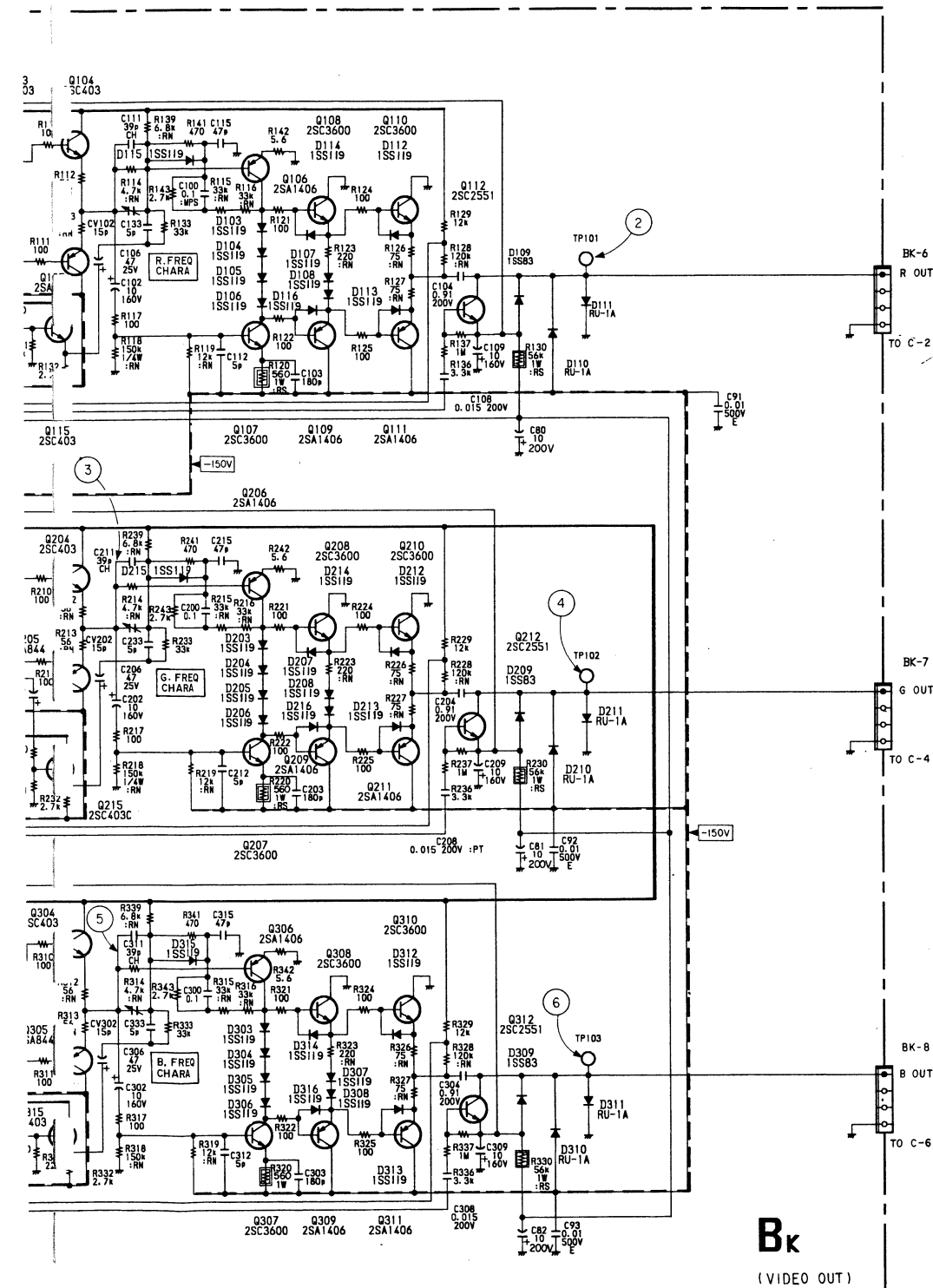


BK BOARD

IC1	NJM4558D	LIPPLE FILTER
Q1	2SA844	INVERTER
12	2SA1091	LIPPLE FILTER
13	2SA1091	LIPPLE FILTER
101	2SC2668	R-PRE AMP.
102	2SA844	R-PRE AMP.
103	2SC403SP	BUFF.
104	2SC403SP	BUFF.
105	2SA844	BUFF.
106	2SA1406	R-VIDEO OUT
107	2SC3600	R-VIDEO OUT
108	2SC3600	BUFF.
109	2SA1406	BUFF.
110	2SC3600	BUFF.
111	2SA1406	BUFF.
112	2SC2551	R-CLAMP
113	2SC403SP	R-CLAMP
114	2SC403SP	R-CLAMP
115	2SC403SP	BLANK PULSE BUFF.
201	2SC2668	G-PRE AMP.
202	2SA844	G-PRE AMP.
203	2SC403SP	BUFF.
204	2SC403SP	BUFF.
205	2SA844	BUFF.
206	2SA1406	G-VIDEO OUT
207	2SC3600	G-VIDEO OUT
208	2SC3600	BUFF.
209	2SA1406	BUFF.
210	2SC3600	BUFF.
211	2SA1406	BUFF.
212	2SC2551	G-CLAMP
213	2SC403SP	G-CLAMP
214	2SC403SP	G-CLAMP
215	2SC403SP	BLANK PULSE BUFF.
301	2SC2668	B-PRE AMP.
302	2SA844	B-PRE AMP.
303	2SC403SP	BUFF.
304	2SC403SP	BUFF.
305	2SA844	BUFF.
306	2SA1406	B-VIDEO OUT
307	2SC3600	B-VIDEO OUT
308	2SC3600	BUFF.
309	2SA1406	BUFF.
310	2SC3600	BUFF.
311	2SA1406	BUFF.
312	2SC2551	B-CLAMP
313	2SC403SP	B-CLAMP
314	2SC403SP	B-CLAMP
315	2SC403SP	BLANK PULSE BUFF.

D1	1SS148	INVERTER
2	1SS148	INVERTER
101	1SS148	BIAS
102	1SS148	BIAS
103	1SS148	BIAS
104	1SS148	BIAS
105	1SS148	BIAS
106	1SS148	BIAS
107	1SS148	BIAS
108	1SS148	BIAS
109	1SS83	CLAMP
110	RU-1A	PROTECTOR
111	RU-1A	PROTECTOR
112	1SS148	PROTECTOR
113	1SS148	PROTECTOR
114	1SS148	PROTECTOR
115	1SS148	PROTECTOR
116	1SS148	PROTECTOR
201	1SS148	BIAS
202	1SS148	BIAS
203	1SS148	BIAS
204	1SS148	BIAS
205	1SS148	BIAS
206	1SS148	BIAS
207	1SS148	BIAS
208	1SS148	BIAS
209	1SS83	CLAMP
210	RU-1A	PROTECTOR
211	RU-1A	PROTECTOR
212	1SS148	PROTECTOR
213	1SS148	PROTECTOR
214	1SS148	PROTECTOR
215	1SS148	PROTECTOR
216	1SS148	PROTECTOR
301	1SS148	BIAS
302	1SS148	BIAS
303	1SS148	BIAS
304	1SS148	BIAS
305	1SS148	BIAS
306	1SS148	BIAS
307	1SS148	BIAS
308	1SS148	BIAS
309	1SS83	CLAMP
310	RU-1A	PROTECTOR
311	RU-1A	PROTECTOR
312	1SS148	PROTECTOR
313	1SS148	PROTECTOR
314	1SS148	PROTECTOR
315	1SS148	PROTECTOR
316	1SS148	PROTECTOR

5. DIAGRAMS

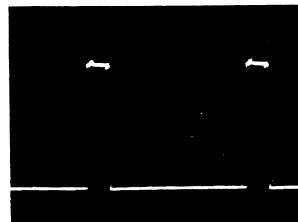
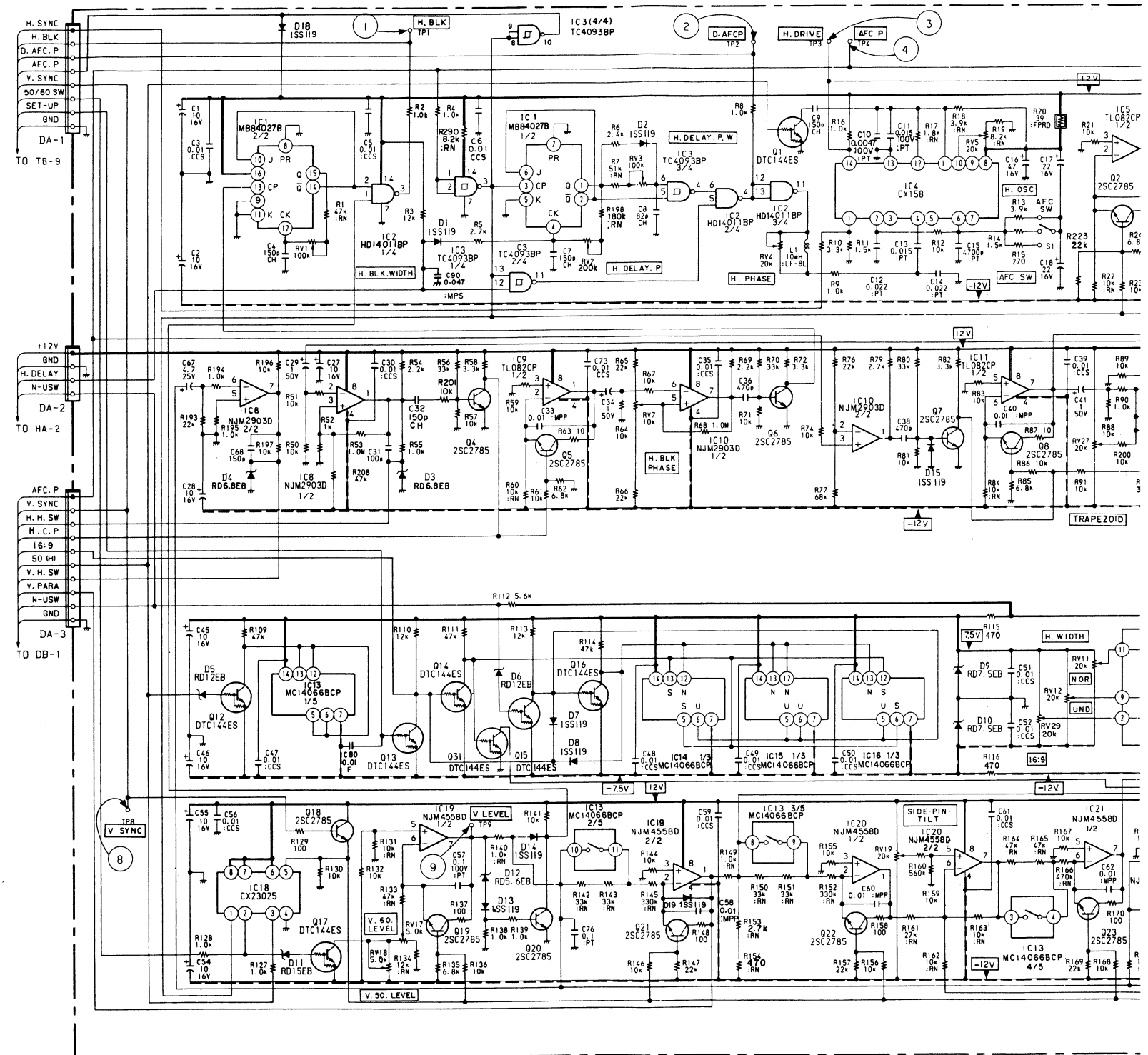


DA BOARD

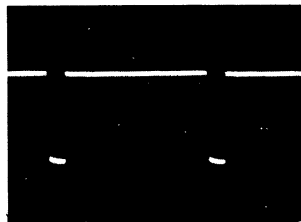
IC1	MB84027B	H. BLK. WIDTH
2	HD14011BP	H. DELAY. POSITION
3	TC4093BP	BUFFER
4	CX-158	H. OSC AFC
5	TL082CP	H. LIN. GEN.
6	TL082CP	H. LIN. GEN.
7	MC1496P	H. LIN. MOD.
8	NJM2903D	1/2H, 1/2V. GEN.
9	TL082CP	H. BLK. PHASE
10	NJM2903D	T & B. H. PHASE
11	TL082CP	T & B. PIN. GEN.
12	MC1496P	T & B. PIN. MOD.
13	MC14066BC	50/60 SW.
14	MC14066BC	DEF. LEVEL. SW
15	MC14066BC	DEF. LEVEL. SW
16	MC14066BC	DEF. LEVEL. SW
17	NJM4558D	BUFFER
18	CX23025	50/60 SELECTOR
19	NJM4558D	V. SAWTOOTH. GEN.
20	NJM4558D	SIDE. PIN. GEN.
21	NJM4558D	SIDE. PIN. GEN.
22	NJM4558D	V. SAWTOOTH. GEN.
23	NJM4558D	BUFFER
24	LM7812CT	+12V REG.
25	LM7912CT	-15V REG.
26	TL082CP	BUFFER
Q1	DTC144ES	H. OSC. SW
2	2SC2785	H. LIN. GEN.
3	2SC2785	H. LIN. GEN.
4	2SC2785	1/2H. P. GEN.
5	2SC2785	H. BLK. GEN.
6	2SC2785	H. BLK. GEN.
7	2SC2785	T & B. PIN. PHASE

8	2SC2785	T & B. PIN. GEN.
9	2SC3068	T & B. PIN. GEN.
10	2SC2785	T & B. PIN. MOD.
12	DTC144ES	50/60 SW
13	DTC144ES	SCAN. SW
14	DTC144ES	SCAN. SW
15	DTC144ES	SCAN. SW
16	DTC144ES	SCAN. SW
17	DTC144ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2785	V. SAW. GEN
20	2SC2785	V. SAW. CLIP
21	2SC2785	SIDE PIN GEN
22	2SC2785	SIDE PIN GEN
23	2SC2785	SIDE PIN GEN
24	2SC2785	V. SAW GEN.
31	DTC144ES	V. LIN GEN
D1	1SS119	H. DELAY SW
2	1SS119	H. DELAY SW
3	RD6.8EB3	CLIPPER
4	RD6.8EB3	CLIPPER
5	RD12E-B3	50/60 SW
6	RD12E-B3	SCAN SW
7	1SS119	SCAN SW
8	1SS119	SCAN SW
9	RD7.5E-B3	+7.5V REG.
10	RD7.5E-B3	-7.5V REG.
11	RD15E-B3	50/60 SW.
12	RD5.6E-B2	V. SAW. CLIP
13	1SS119	V. SAW. CLIP
14	1SS119	V. SAW. CLIP
15	1SS119	AFC. CLIP
18	1SS119	PROT
19	1SS119	PROT

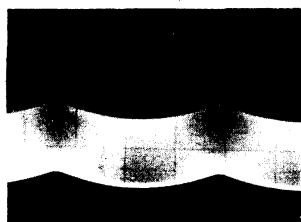
DA board (DEFLECTION WAVEFORM)



① 12Vp-p (H)

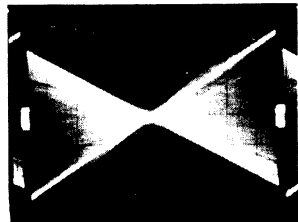


② 12Vp-p (H)

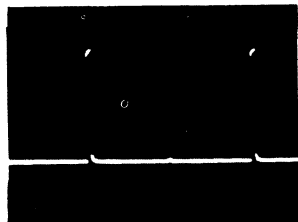


③ 9Vp-p (H)

⑤ 3.5Vp-p (H)



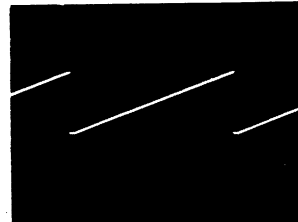
⑦ 0.5Vp-p (V)



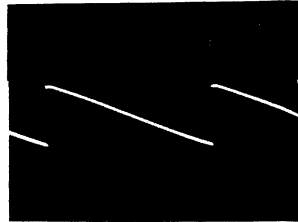
⑧ 12Vp-p (V)



⑥ 1.2Vp-p (V)

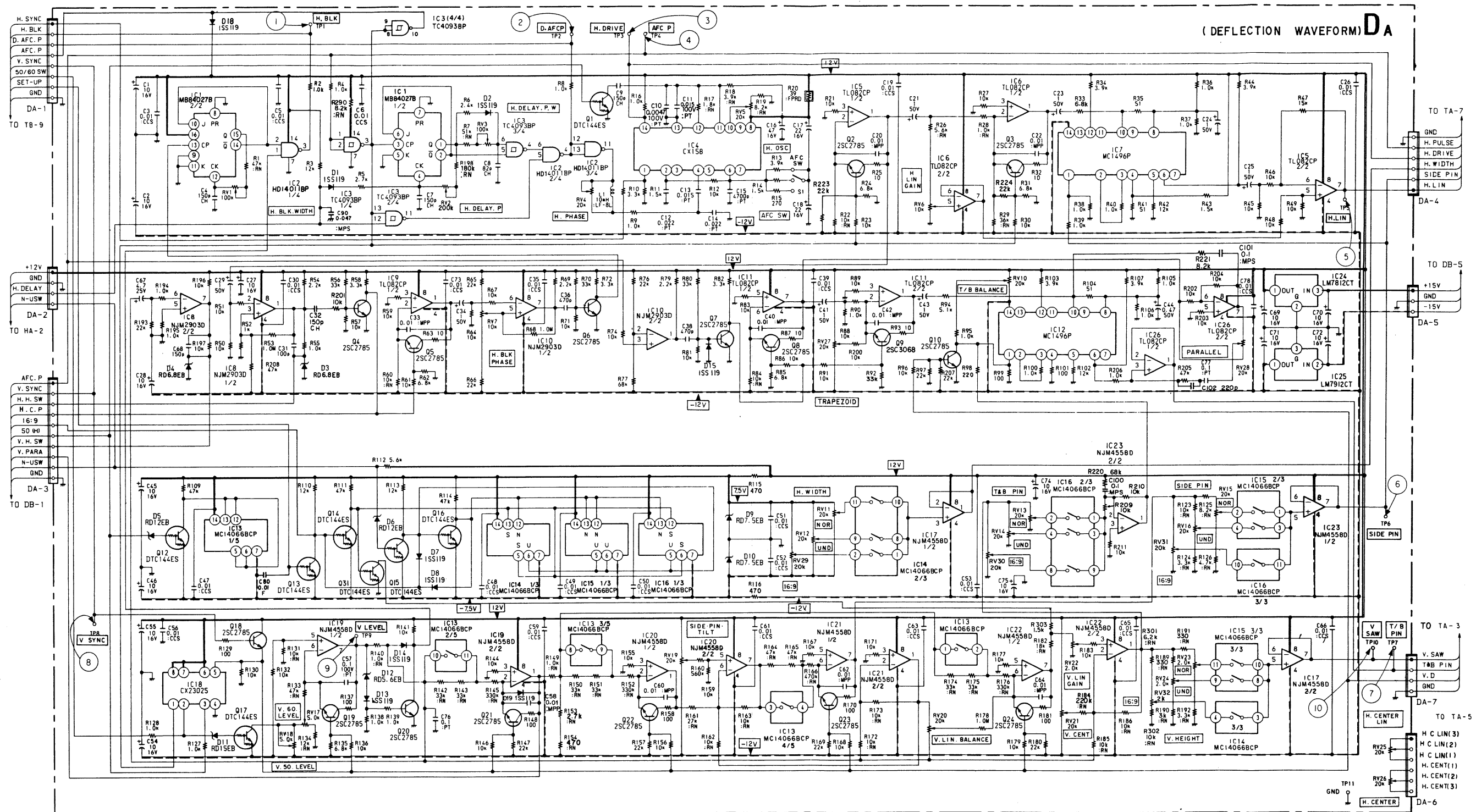


⑨ 12Vp-p (V)



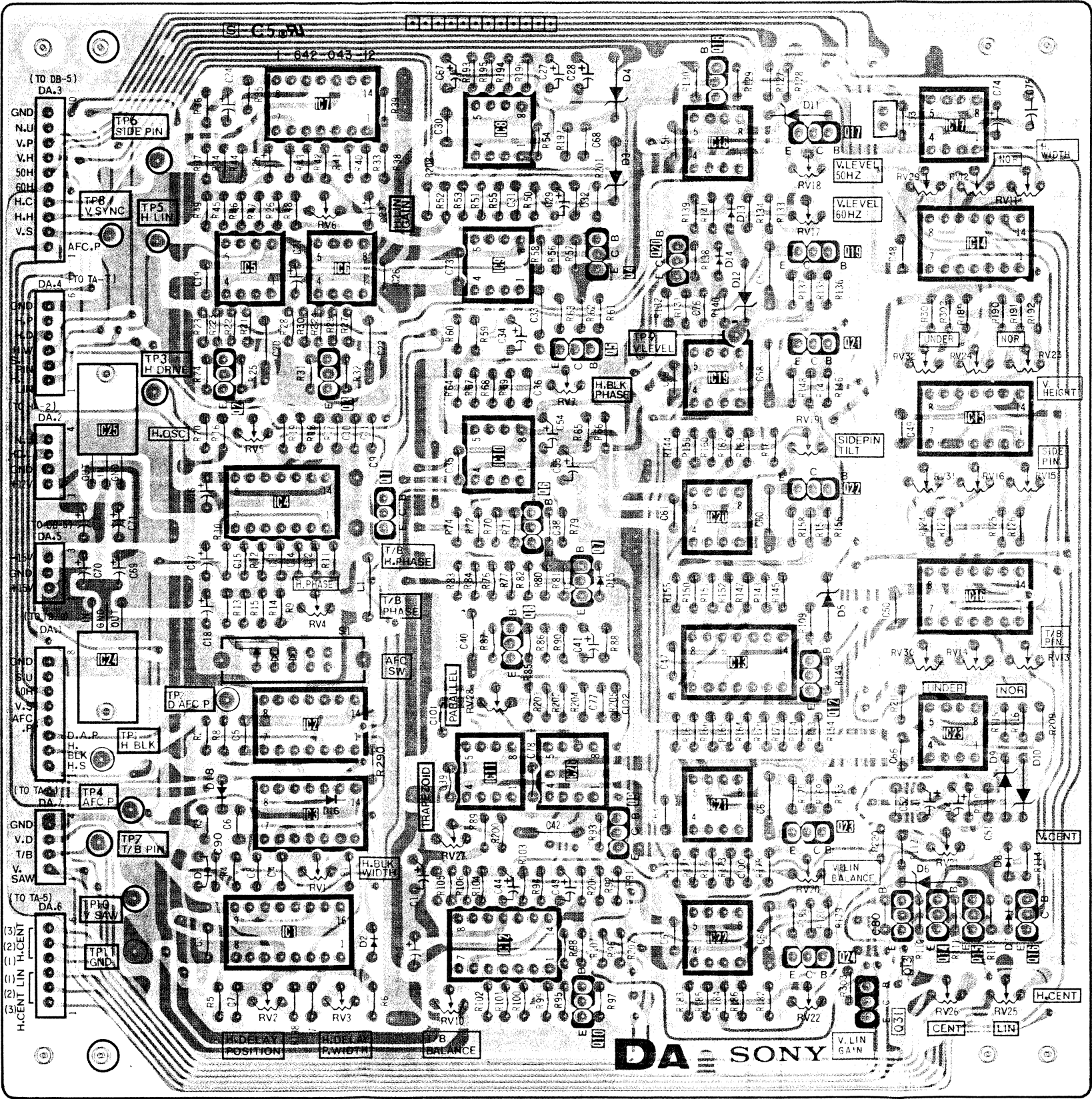
⑩ 6Vp-p (V)

DA board (DEFLECTION WAVEFORM)



DA board (DEFLECTION WAVEFORM)

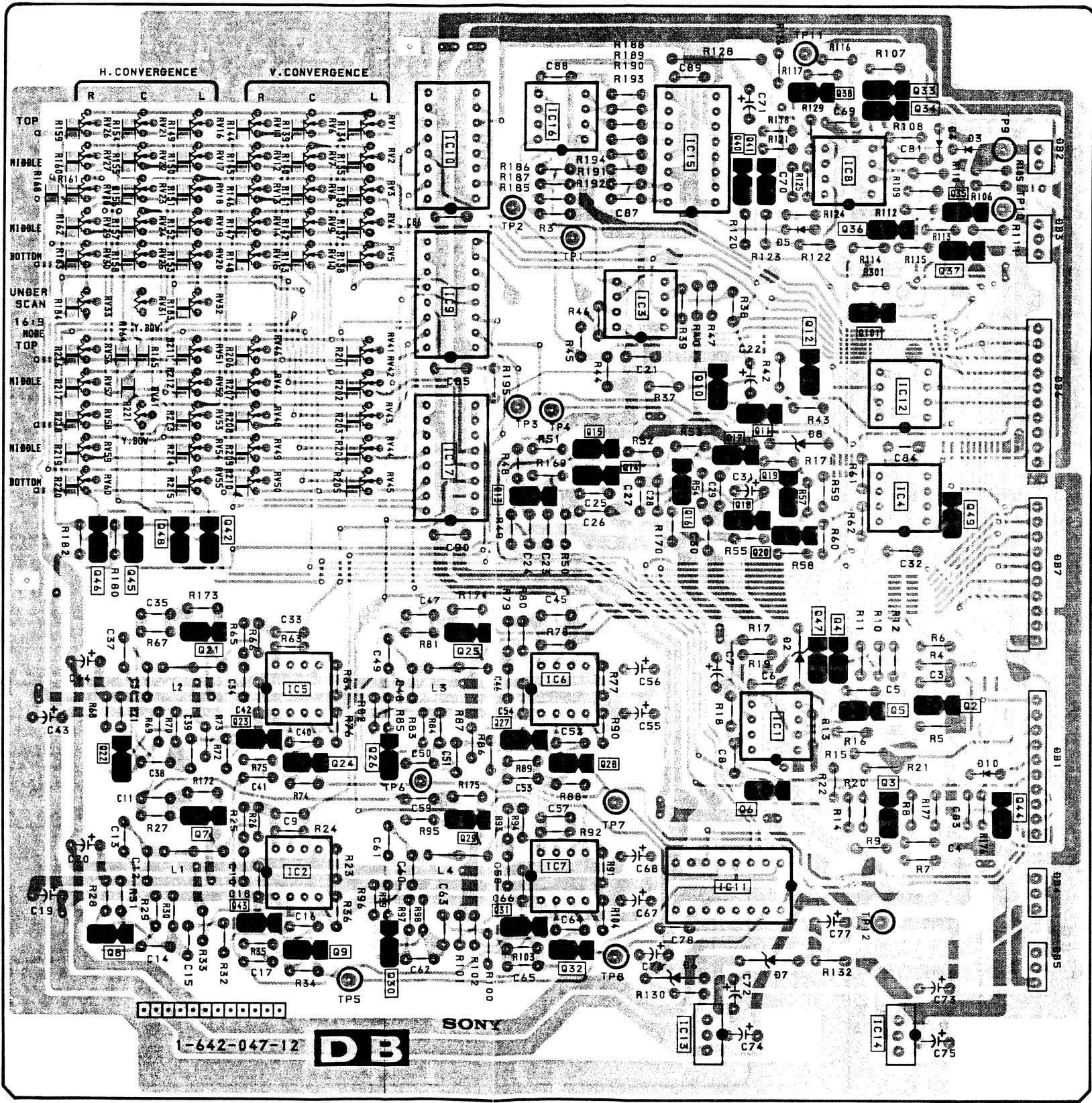
IC	Q	D	TP	ADJ
7	18	4		
8 18 17	17	11		
			TP6	RV18
		3	RV29	RV12 RV11
		13	RV6	RV17
		14	TP8	
5,6,9	4,20	12	TP5	
	5	21	TP9	
19	2 3		RV32 RV24	RV23
			TP3	RV7
25	15			
			RV5	
10			RV19	
			RV31	RV16 RV15
4	20	22		
	6			
	7	5	RV4	
	8			
24	12		RV30 RV14	RV13
			TP2	
2	23		RV28	
11,26		9	TP1	
3	21	16 18	TP4	
	9	23	TP7	RV27 RV21
				RV1 RV20
	11	6	TP10	
	13,14	7		
	15,16			
1	12 22	2	TP11	
	24			
	31			
	10			
			RV2	RV10 RV26
			RV3	RV22 RV25



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

DB board (CONVERGENCE WAVEFORM)

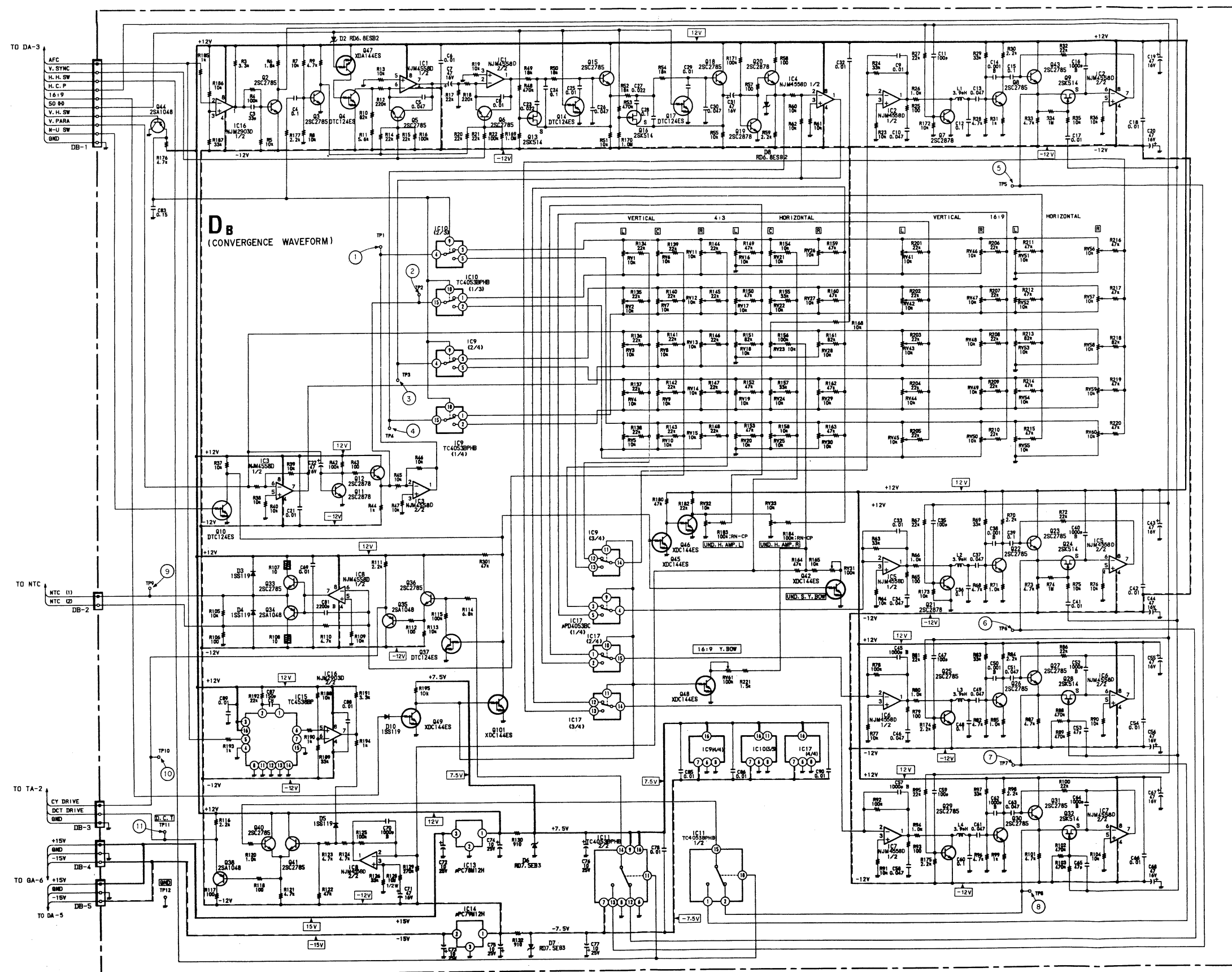
IC	Q		D	TP	ADJ			
				11				
16	38	33			26	21	16	11 6 1
10 15		34	4 3	9	27	22	17	12 7 2
8	40	41			28	23	18	13 8 3
		35	2	10	29	24	19	14 9 4
		36	5	1	30	25	20	15 10 5
		37			33	31	32	
9 3	101				56	51	46	41
	10	12			57	52	47	42
		11	3 4		58	61	53	48 43
17	15	17	8		59	54	49	44
4	13	14			60	55	50	45
		19						
	18	20						
	46	45						
		42						
	21	25	2					
		47						
		4						
5 6		5						
		2						
1	23	27						
	22	24	10					
		26						
		28						
		6	6 7					
	7	29						
		3						
		44						
2 7								
11								
	43	31		12				
	8	9	7	8				
		30						
		32	6	5				
13 14								

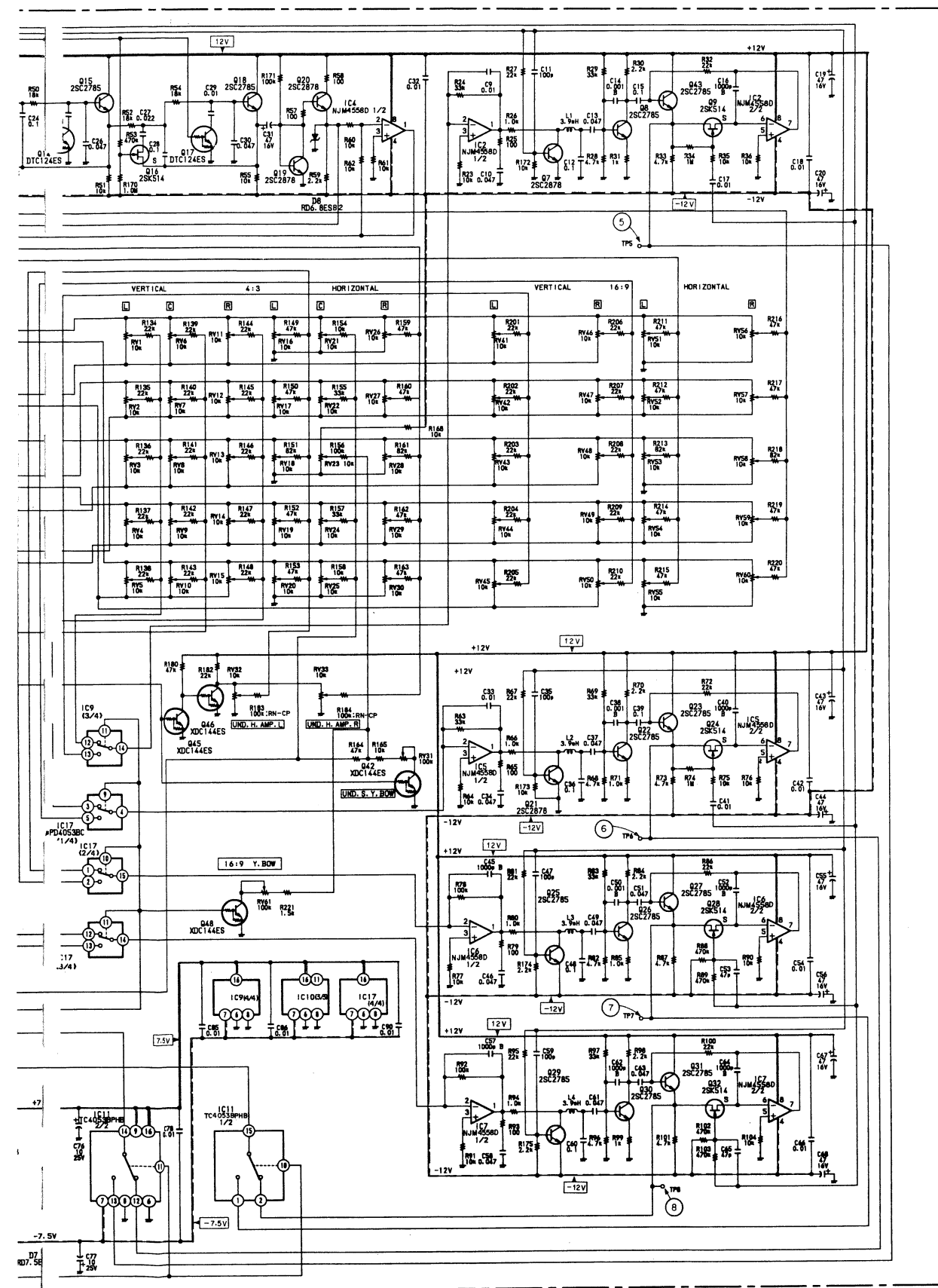


CAD

- Pattern from the side which enables seeing.
- Pattern of the rear side.

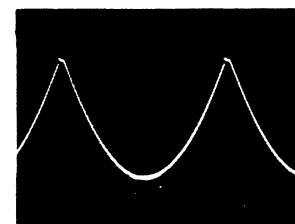
DB board (CONVERGENCE WAVEFORM)



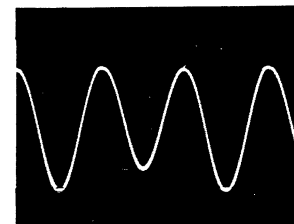


IC 1	NJM4558D	2XV GEN
2	NJM4558D	AMP & CLAMP
3	NJM4558D	INVERTER
4	NJM4558D	INVERTER
5	NJM4558D	AMP & CLAMP
6	NJM4558D	AMP & CLAMP
7	NJM4558D	AMP & CLAMP
8	NJM4558D	AMP
9	TC4053BPHB	SW
10	TC4053BPHB	SW
11	TC4053BPHB	1/2HV. SW
13	uPC78M12H	+12V REG.
14	uPC79H12H	-12V REG.
15	TC4538BP	H.CONV CLAMP
16	NJM2903D	INVERTER
17	uPD4053BC	H. PARA GEN & CLAMP
Q 2	2SC2785	H. SW
3	2SC2785	2XV. PULSE GEN
4	DTC124ES	50/60 SW
5	2SC2785	2XV SW
6	2SC2878	2XV SW
7	2SC2878	H. SW
8	2SC2785	AMP
9	2SK514	H. CLAMP
10	DTC124ES	N/U SW
11	2SC2878	CLAMP
12	2SC2878	BUFFER
13	2SK514	50/60 SW
14	DTC124ES	50/60 SW
15	2SC2785	50/60 SW
16	2SK514	50/60 SW
17	DTC124ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2878	CLAMP

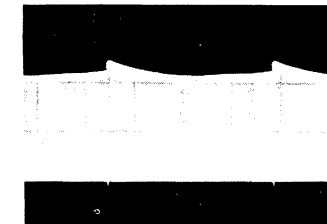
Q 20	2SC2878	BUFFER
21	2SC2878	H. SW
22	2SC2785	AMP
23	2SC2785	H. CLAMP
24	2SK514	H. CLAMP
25	2SC2785	H. SW
26	2SC2785	AMP
27	2SC2785	H. CLAMP
28	2SK514	H. CLAMP
29	2SC2785	H. SW
30	2SC2785	AMP
31	2SC2785	H. CLAMP
32	2SK514	H. CLAMP
33	2SC2785	N.T.C AMP
34	2SA1048	N.T.C AMP
35	2SA1048	BUFFER
36	2SC2785	BUFFER
37	DTC124ES	N/U SW
38	2SA1048	BUFFER
40	2SC2785	ADDER
41	2SC2785	ADDER
42	XDC144ES	UND. S. Y. BOW
43	2SC2785	H. CLAMP
44	2SA1048	BUFFER
45	XDC144ES	UND. H. AMP SW
46	XDC144ES	UND. H. AMP SW
47	XD144ES	16:9 SW
48	XDC144ES	16:9 Y. BOW
49	XDC144ES	INVERTER
101	XDC144ES	N/U SW
D 2	RD6.8ESB2	LEVEL SHIFT
3	1SS119	PROTECTOR
4	1SS119	PROTECTOR
5	1SS119	DC STOPPER
6	RD7.5E-B3TN	+7.5V REG.
7	RD7.5E-B3TN	-7.5V REG.
8	RD6.8ESB2	LIMITER
10	1SS119	DC STOPPER



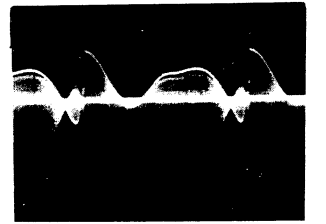
① 4.8Vp-p (V)



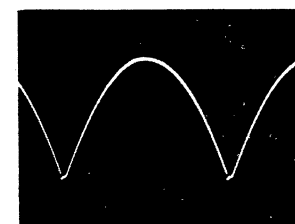
④ 2.5Vp-p (V)



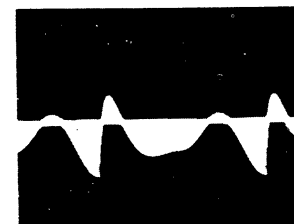
⑦ 2.5Vp-p (V)



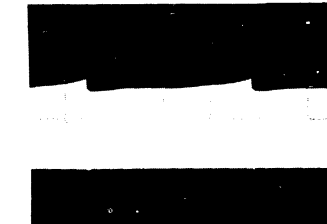
⑩ 0.4Vp-p (V)



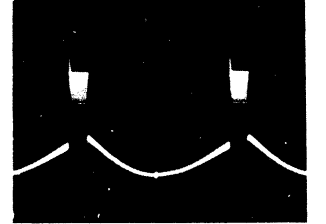
② 4.8Vp-p (V)



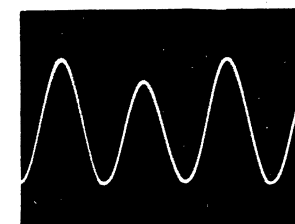
⑤ 0.3Vp-p (V)



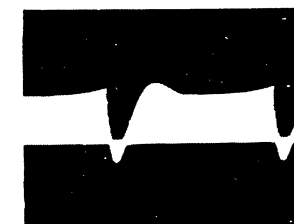
⑧ 1.8Vp-p (V)



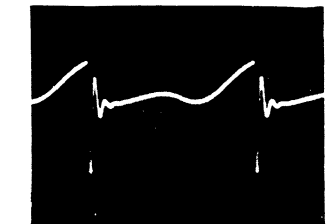
⑪ 5Vp-p (H)



③ 2.5Vp-p (V)



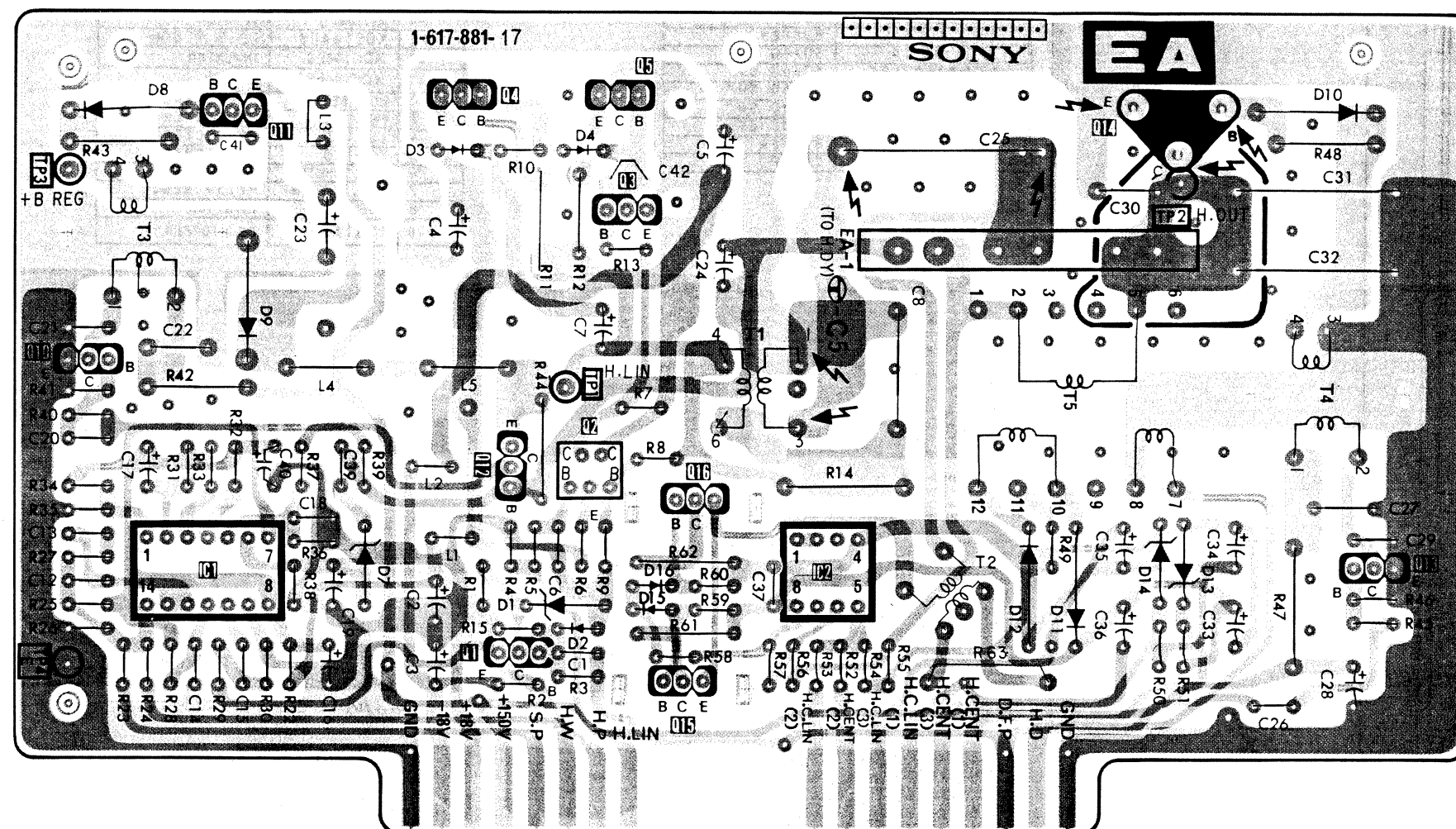
⑥ 0.3Vp-p (V)



⑨ 2.2Vp-p (V)

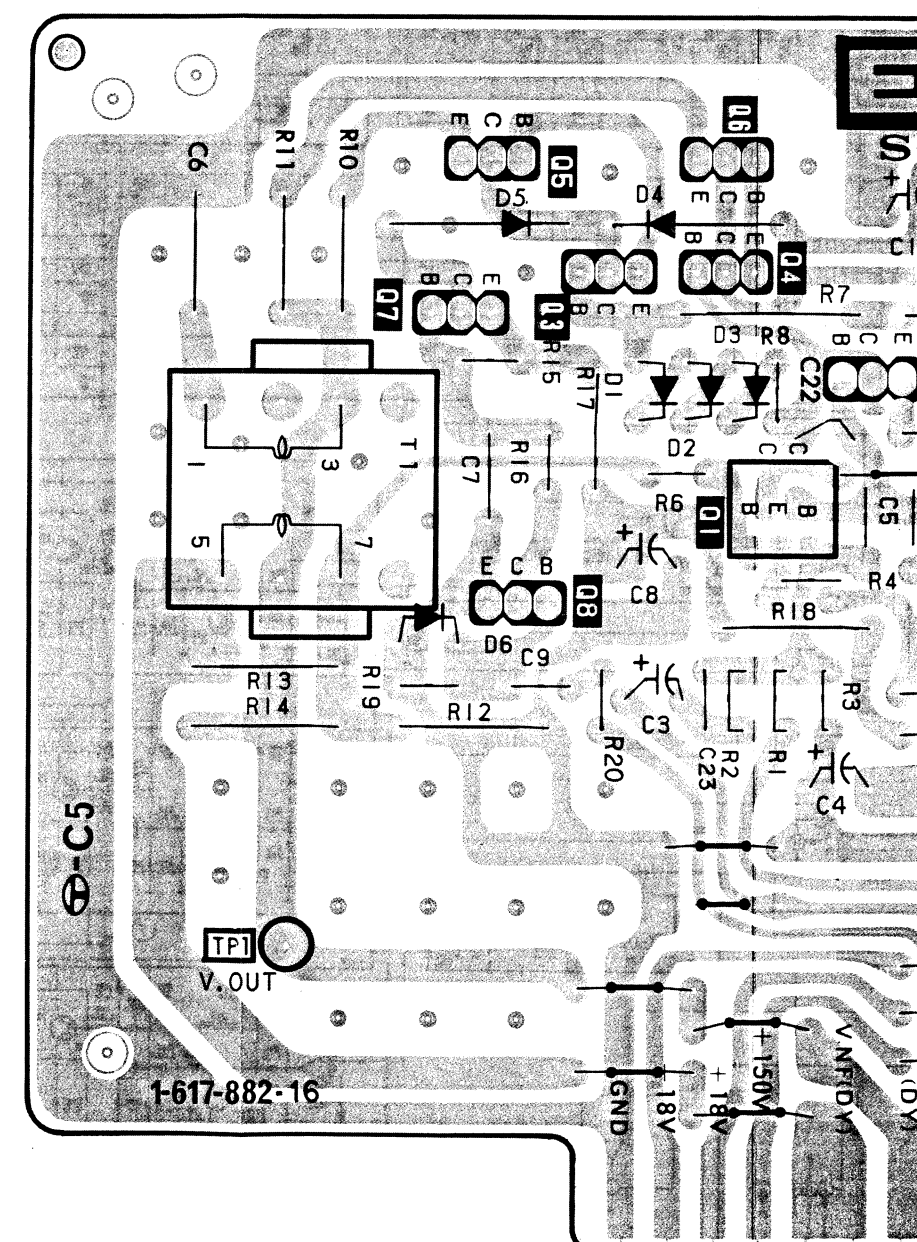
EA board (H OUT)

IC	1																2															
Q	10				11				4				5				3				14				13							
D	8				9				7				3				4				16				10							
TP	TP 3				TP 4				TP 1				TP 2				12				11				14				13			



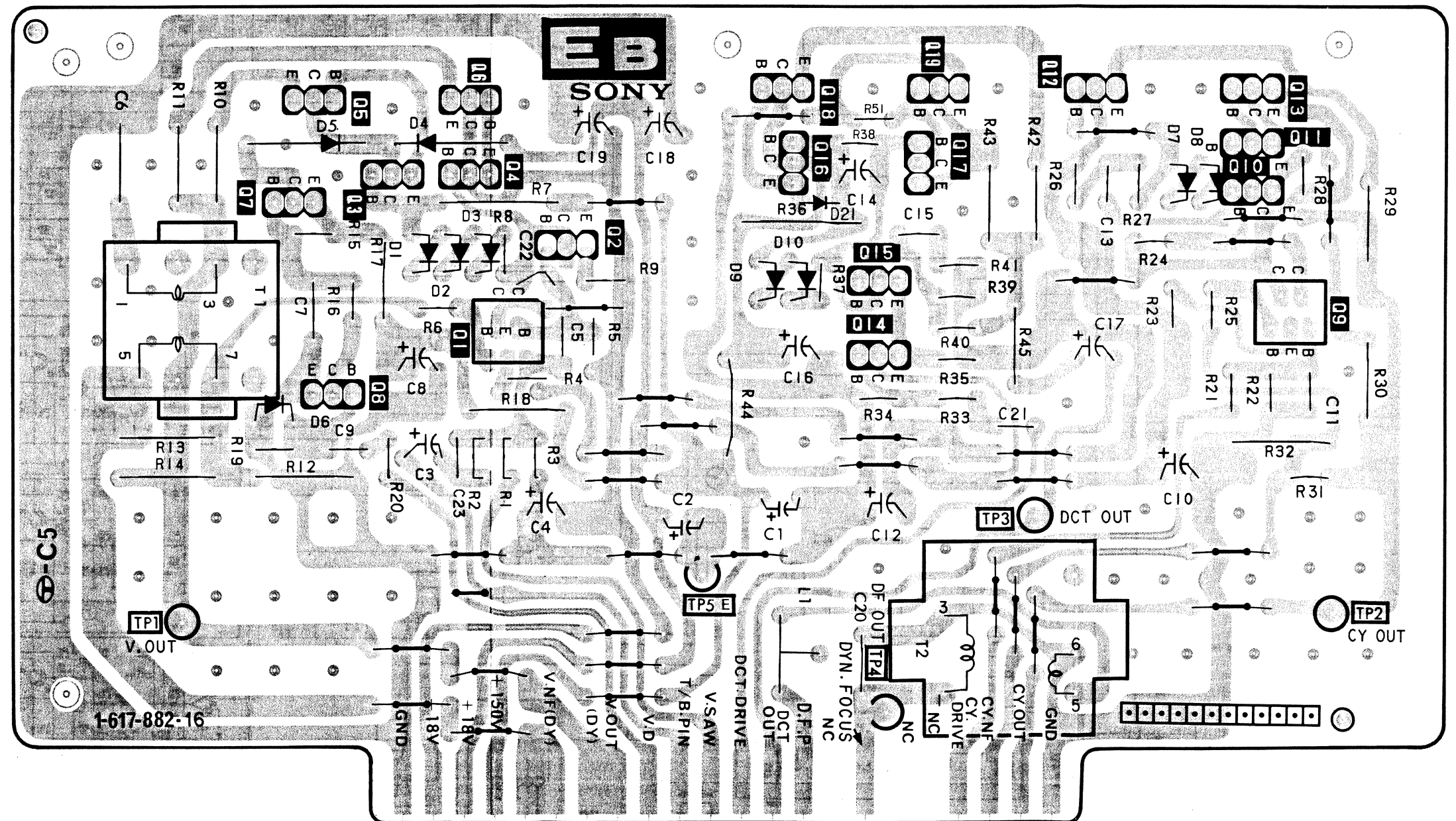
EB board (V OUT)

Q	7 5 8 3 6 4 1 2
D	6 5 4 1 2 3
TP	TPI



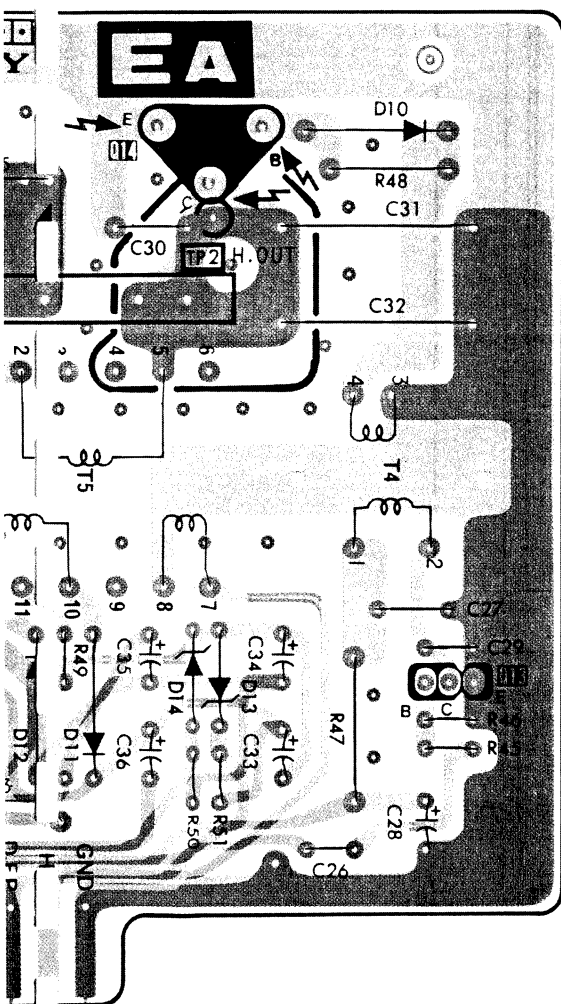
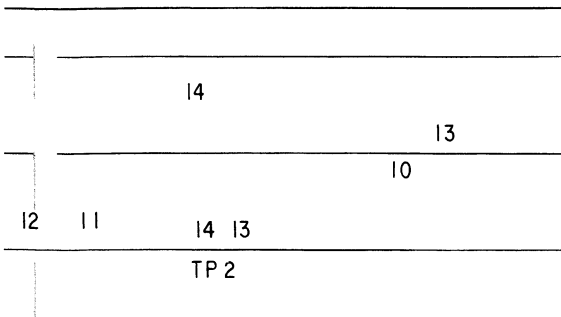
EB board (V OUT)

Q		5	3	6		18	19	12	13	
	7	8		4	2	16	17		11	9
D		5		4		9	10	7	8	
	6		1	2	3					
TP	TP1					TP5	TP4	TP3		TP2

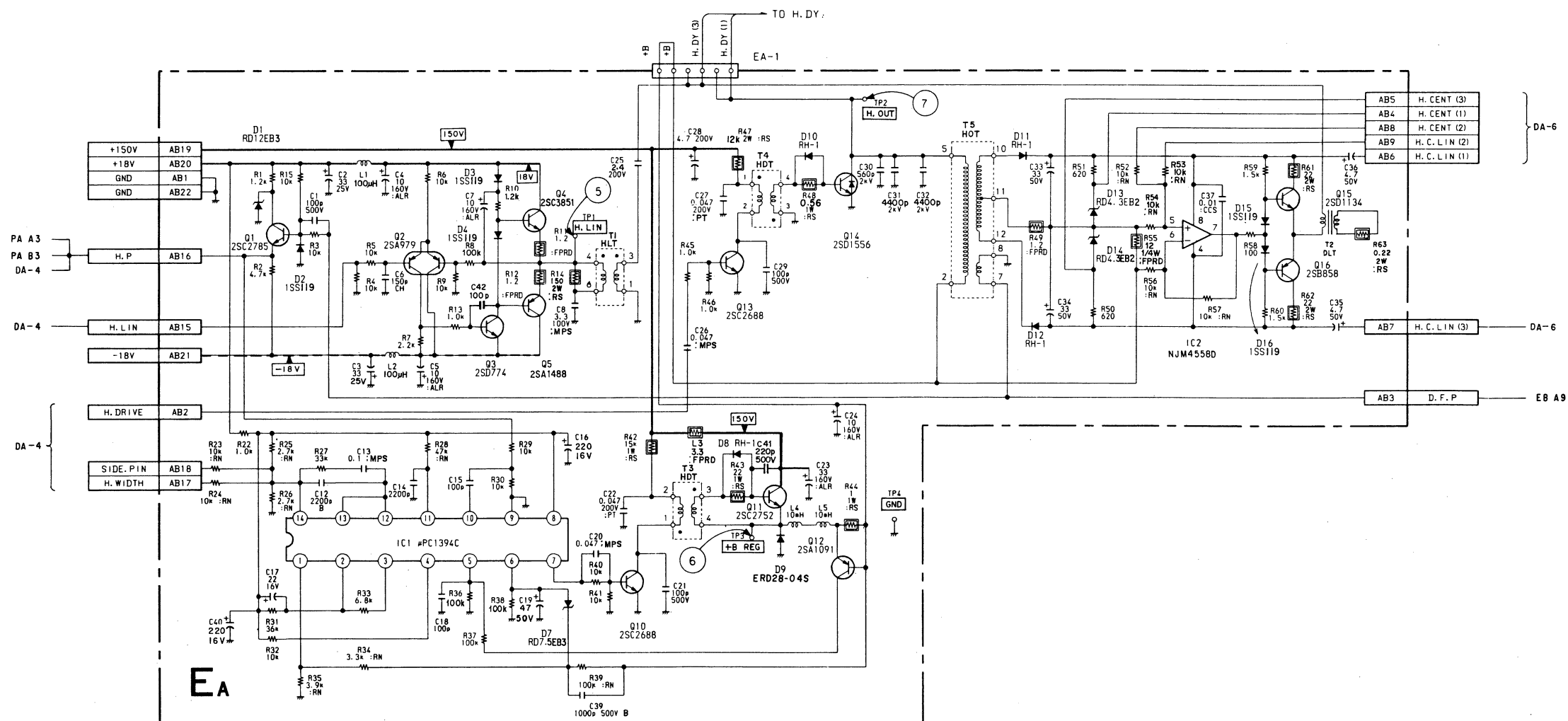
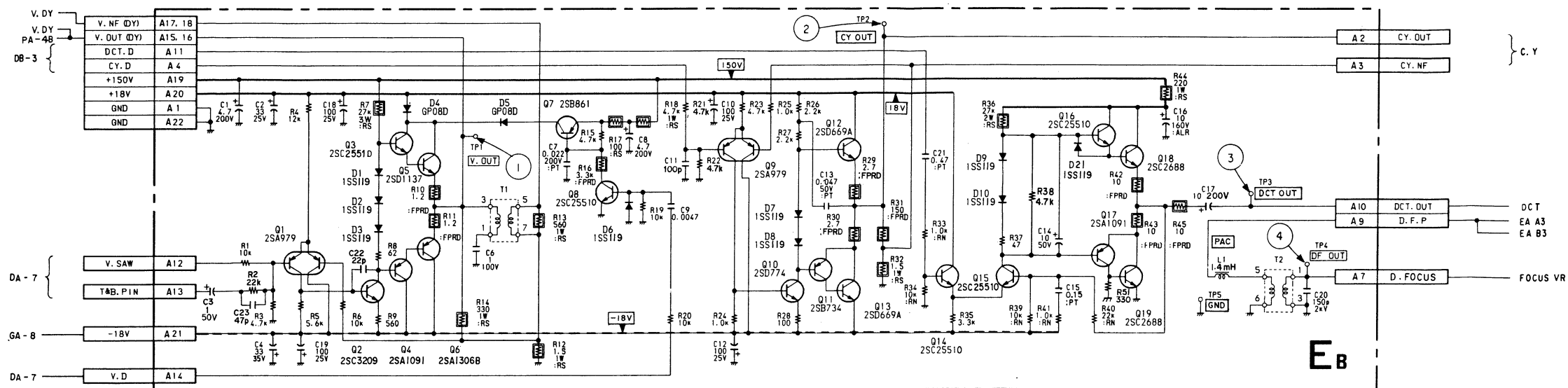


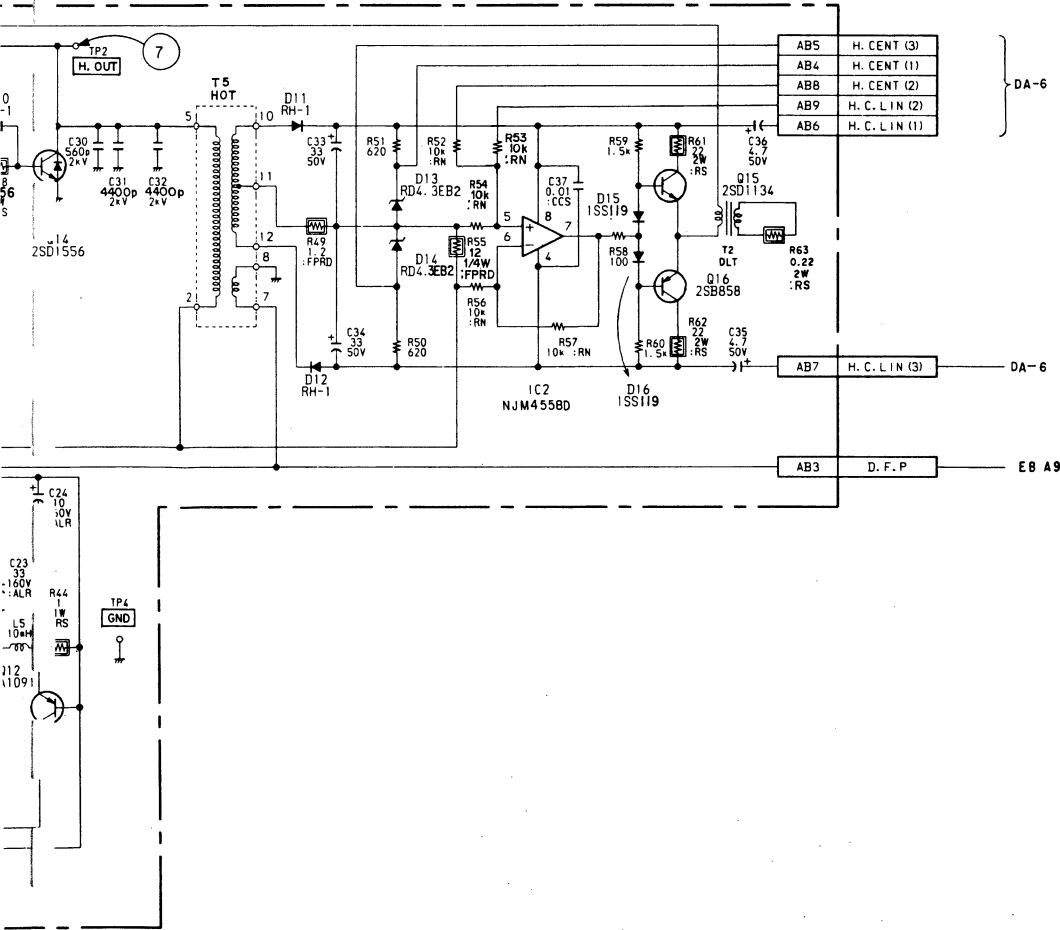
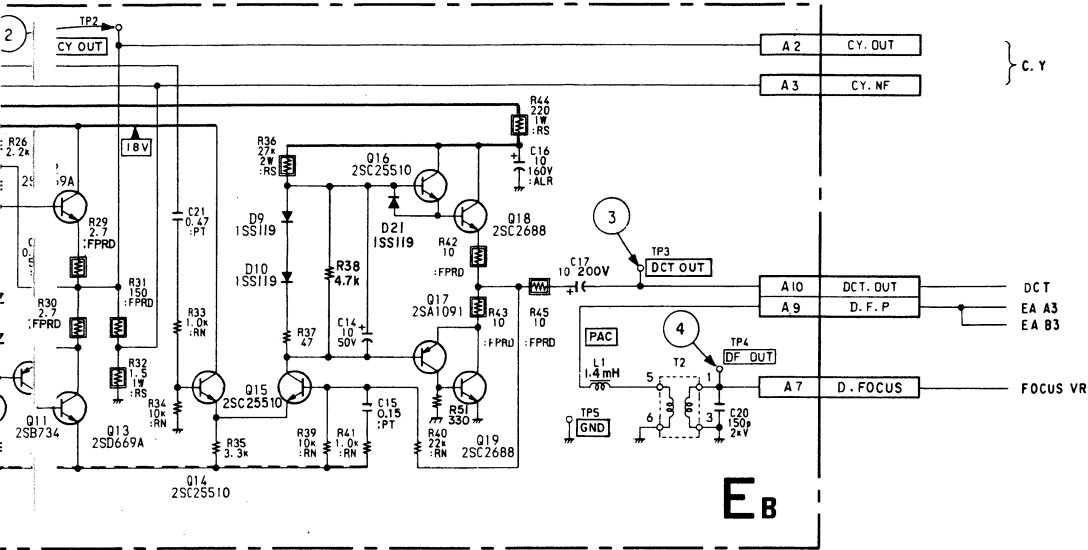
1-617-882-16

• : Pattern from the side which enables seeing.
• : Pattern of the rear side.



EA board (H OUT)
EB board (V OUT)



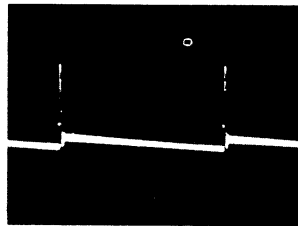


EA BOARD

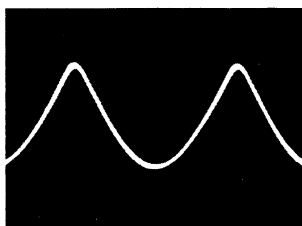
IC1	uPC1394C	P.W.M CONTROL
2	NJM4558D	H.CENT
Q1	2SC2785	H.PULSE BUFFER
2	2SA979	H.LIN AMP
3	2SD774	H.LIN AMP
4	2SC3851	H.LIN AMP OUT
5	2SA1488	H.LIN AMP OUT
10	2SC2688	P.W.M DRIVE
11	2SC2752	P.W.M OUT
12	2SA1091	O.C.P
13	2SC2688	H.DRIVE
14	2SD1556	H.OUT
15	2SD1134	H.CENT
16	2SB858	H.CENT
D1	RD12E-B3	CLIPPER
2	1SS119	PROTECTOR
3	1SS119	BIAS
4	1SS119	BIAS
7	RD7.5E-B3	PROTECTOR
8	RH-1	P.W.M DRIVE
9	ERD28-04S	P.W.M SW
10	RH-1	H.DRIVE
11	RH-1	H.P.RECT.
12	RH-1	H.P.RECT.
13	RD4.3E-B2	+4.3V REG
14	RD4.3E-B2	-4.3V REG
15	1SS119	BIAS
16	1SS119	BIAS

EB BOARD

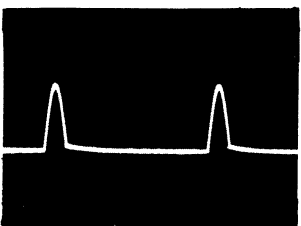
Q1	2SA979	V.AMP
2	2SC3209	V.AMP
3	2SC25510	V.AMP
4	2SA1091	V.AMP
5	2SC32983	V.AMP OUT
6	2SA1306B	V.AMP OUT
7	2SB861	V.RETRACE SW
8	2SC25510	V.RETRACE SW
9	2SA979	CY.AMP
10	2SD774	CY.AMP
11	2SB740	CY.AMP
12	2SD669A	CY.AMP OUT
13	2SD669A	CY.AMP OUT
14	2SC25510	D.C.T AMP
15	2SC25510	D.C.T AMP
16	2SC25510	D.C.T AMP
17	2SA1091	D.C.T AMP
18	2SC2688	D.C.T AMP OUT
19	2SC2688	D.C.T AMP OUT
D1	1SS119	BIAS
2	1SS119	BIAS
3	1SS119	BIAS
4	GP08D	DC.STOPPER
5	GP08D	DC.STOPPER
6	1SS119	PROTECTOR
7	1SS119	BIAS
8	1SS119	BIAS
9	1SS119	BIAS
10	1SS119	BIAS
21	1SS119	PROTECTOR



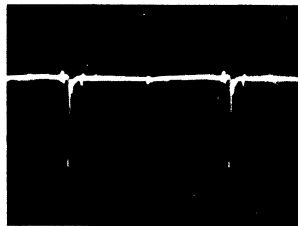
① 80Vp-p (V)



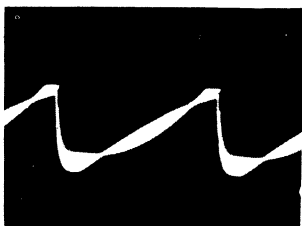
④ 210Vp-p (H)



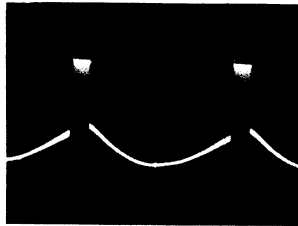
⑦ 650Vp-p (H)



② 20Vp-p (H)



⑤ 34Vp-p (H)



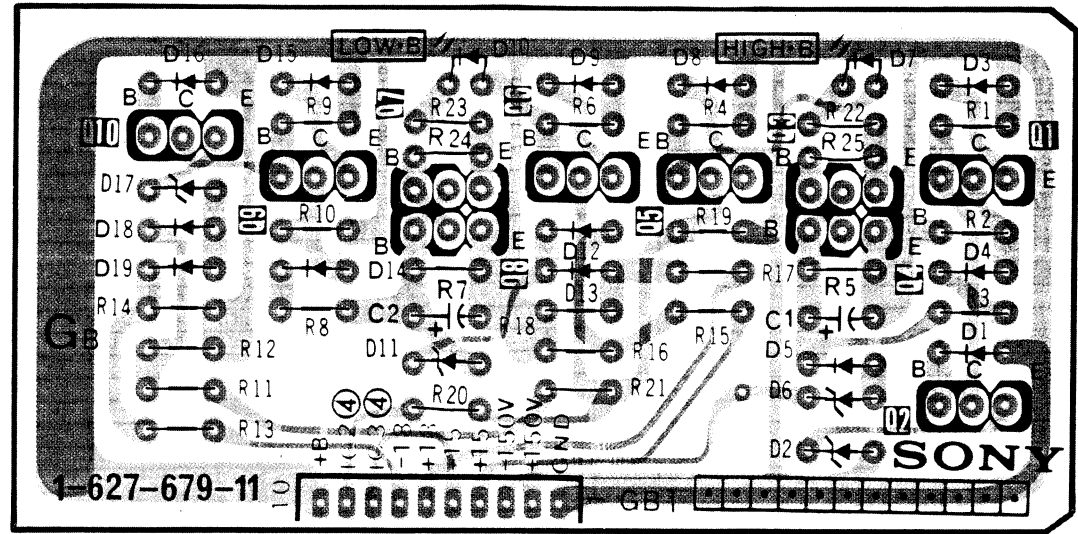
③ 100Vp-p (H)



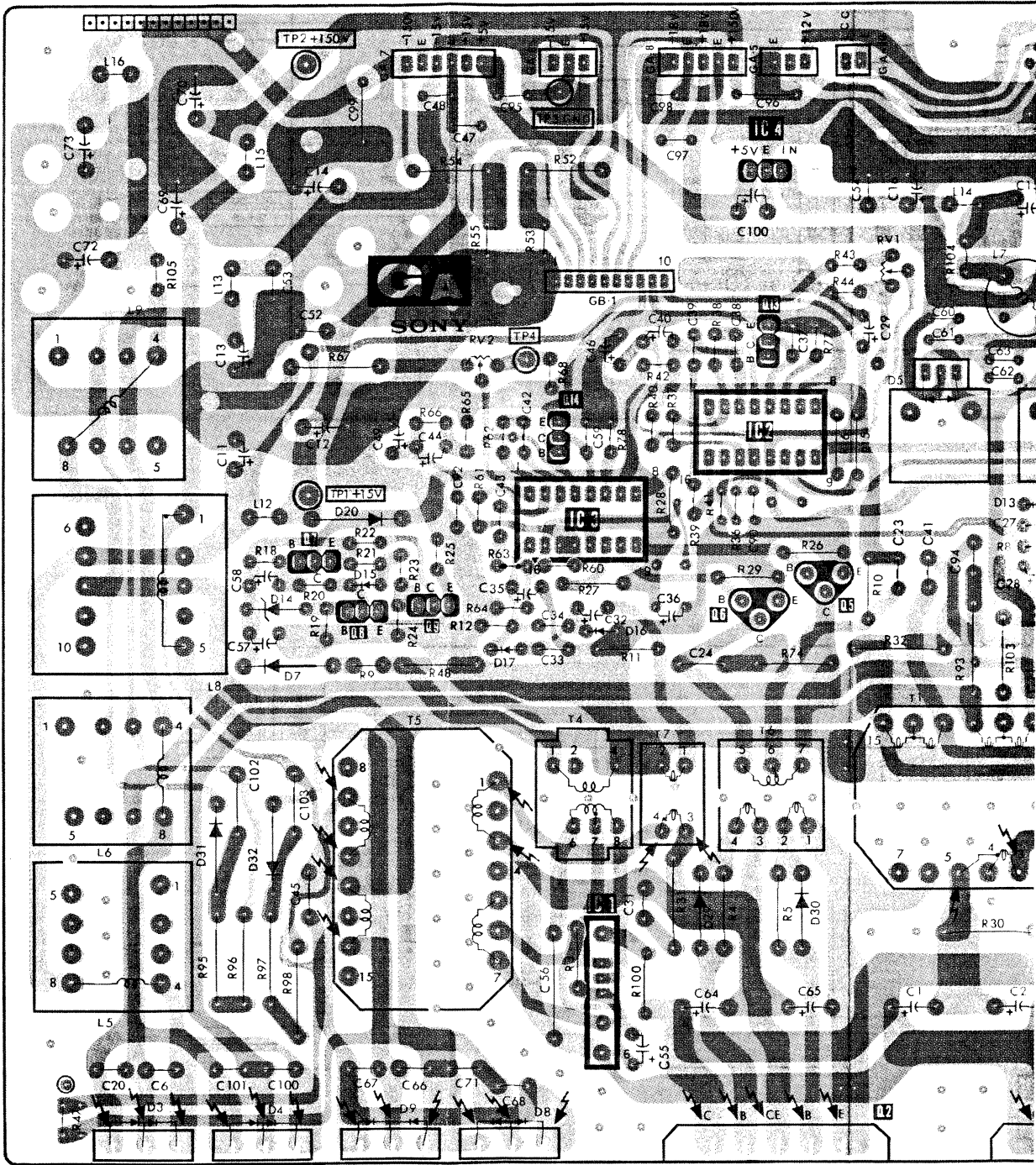
⑥ 160Vp-p (H)

GB board (OVER VOLTAGE PROTECTOR)

GA board (AC RECT, DC REG)

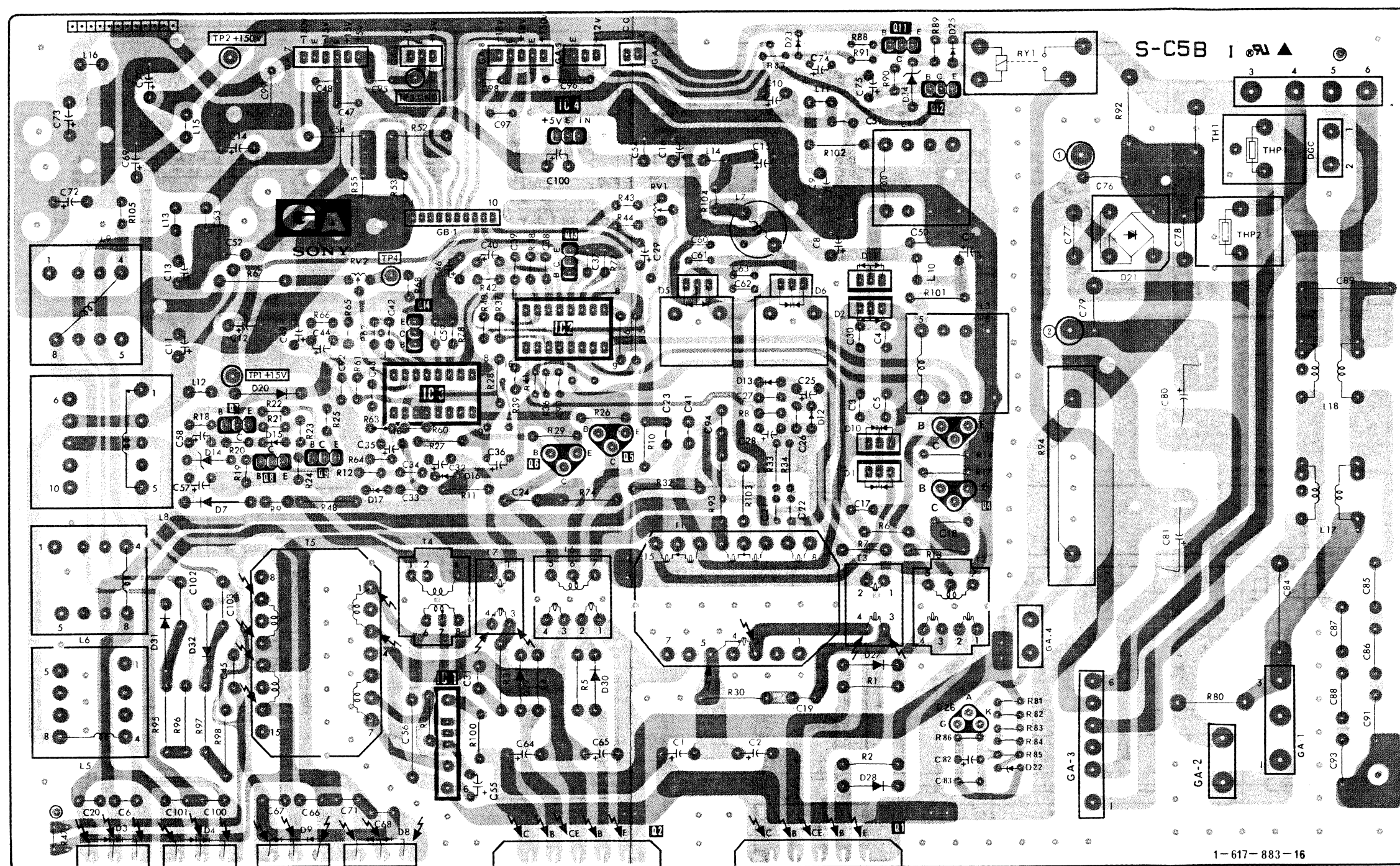


IC	Q	D	ADJ-TP
4	11	23	25
		24	TP2
	12	24	TP3
2	13	5	6
		2	TP1
	14	20	13
		15	12
3	7	5	3
		9	6
	8	14	10
		16	1
1	2	31,32	27
		29	30
	1	26	22
		28	8



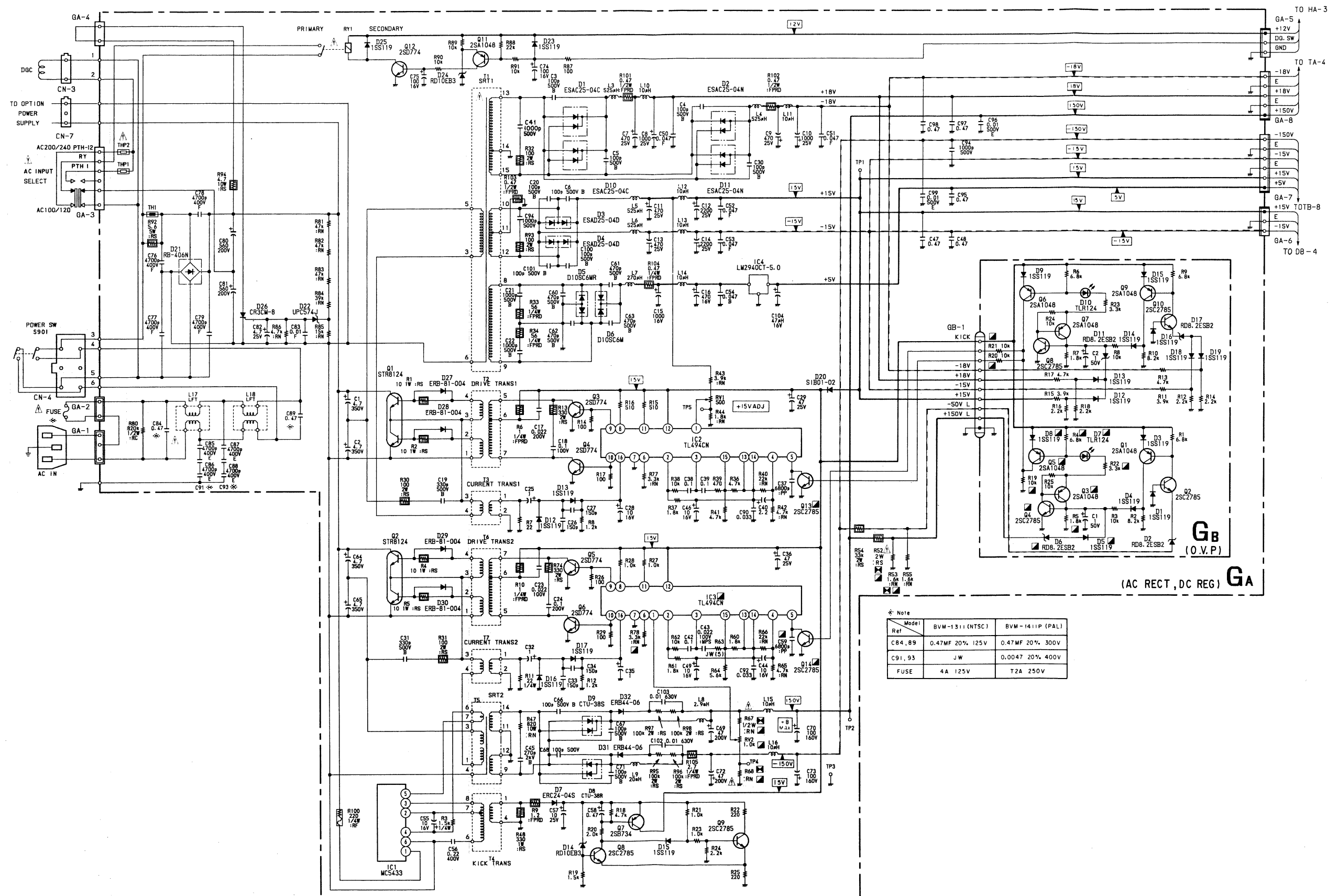
GA board (AC RECT, DC REG)

IC	Q	D	ADJ-TP
		23 25	TP2
	11	24	TP3
	12		
4			RV1
		21	
	13	11	RV2 TP4
		5 6	TP5
		2	
2	14		
			TP1
3		20	
		13	
	7	12	
	5 3	15	
	6	10	
	9	14	
	8	16	
		17	
		7	
		31,32	
		29	
		27	
		30	
		26	
		22	
		28	
		3	
		4	
		9	
		8	
	2		

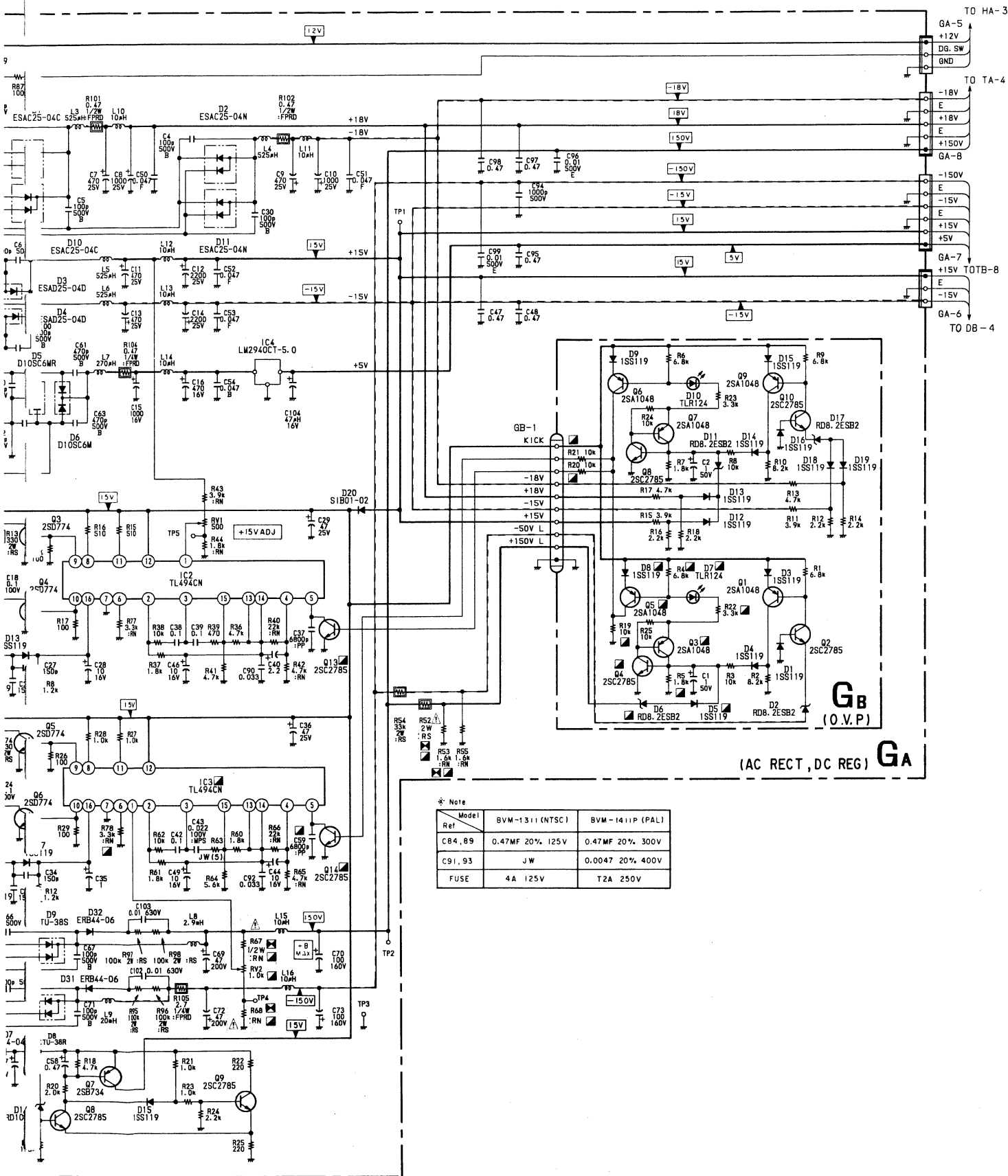


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)



Model Ref	BVM-1311 (NTSC)	BVM-1411P (PAL)
C84, 89	0.47MF 20% 125V	0.47MF 20% 300V
C91, 93	JW	0.0047 20% 400V
FUSE	4A 125V	T2A 250V



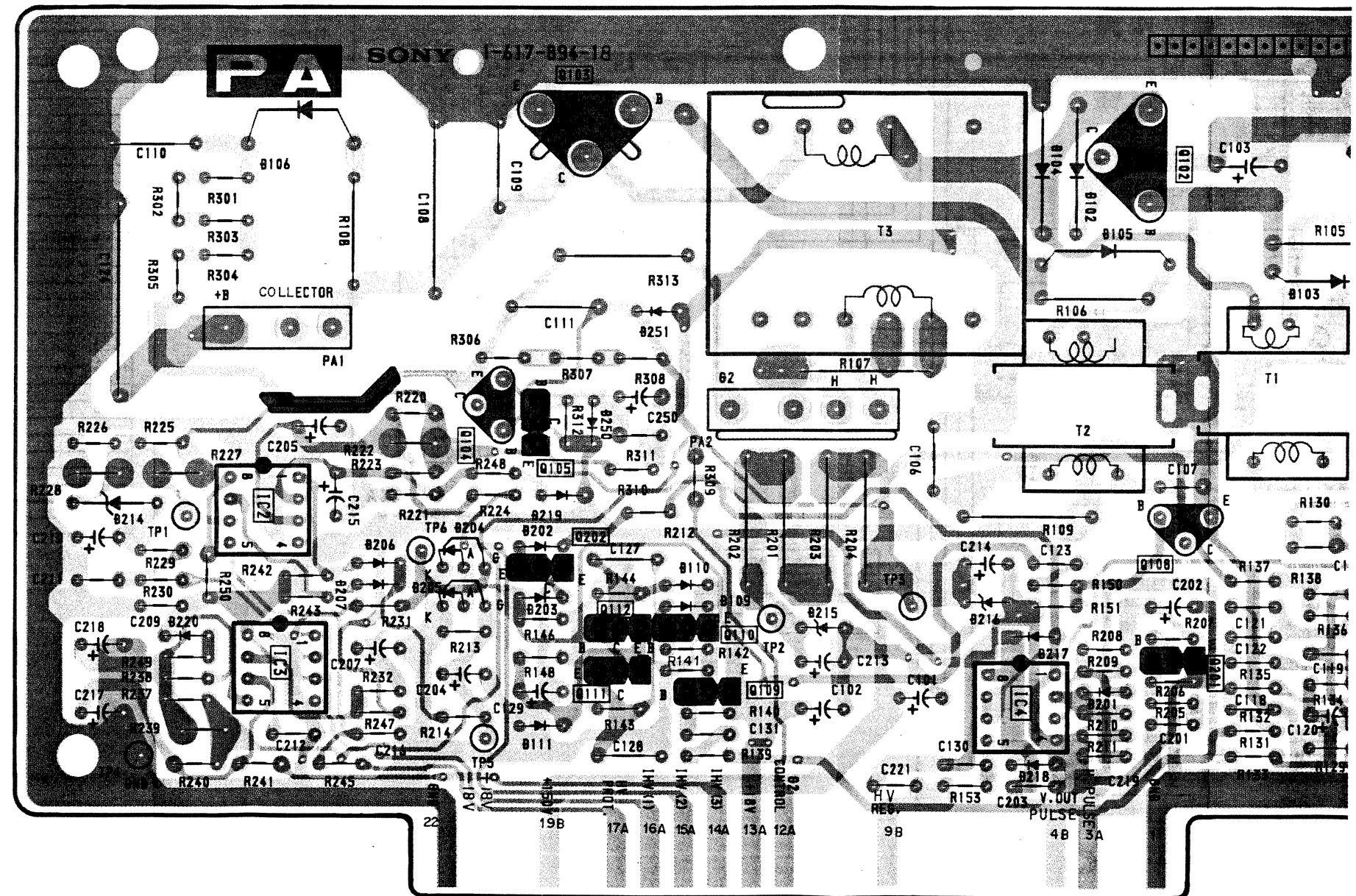
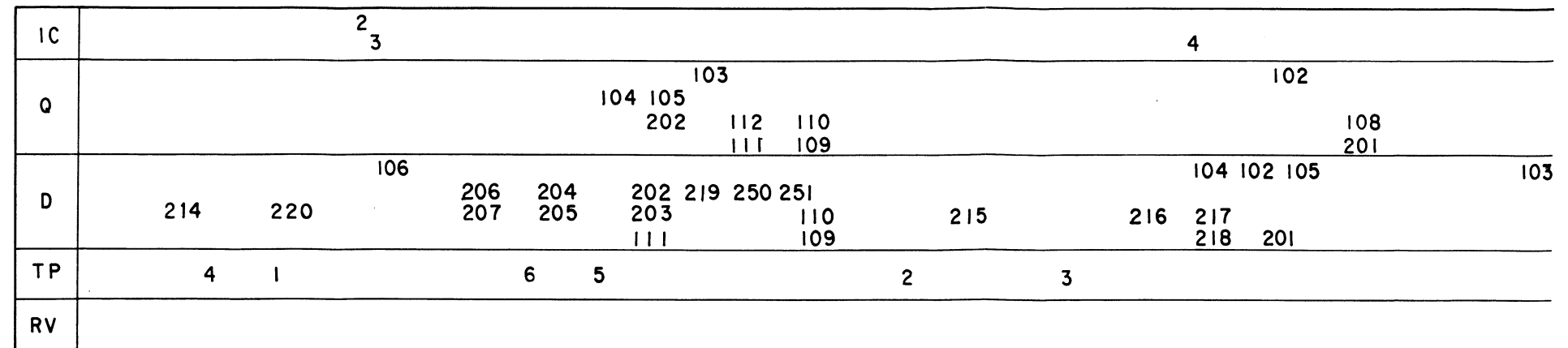
GA BOARD

IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
4	LM2940CT-5.0	+5V REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	D10SC6MR	+5V RECT
6	D10SC6M	+5V RECT
7	ERC24-04S	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
20	SIB01-02	DC. STOPPER
21	RB406N	AC RECT
22	uPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

GB BOARD

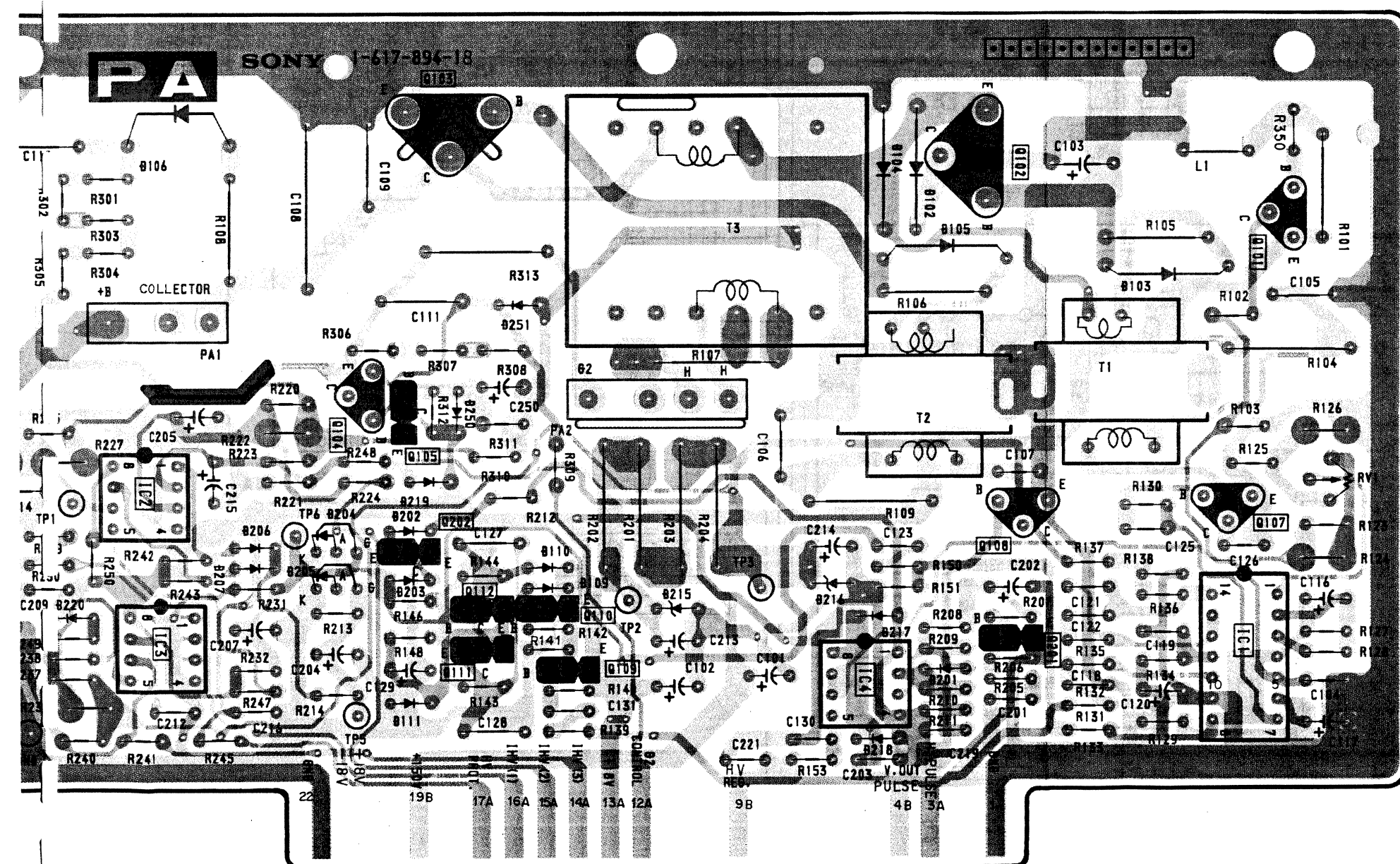
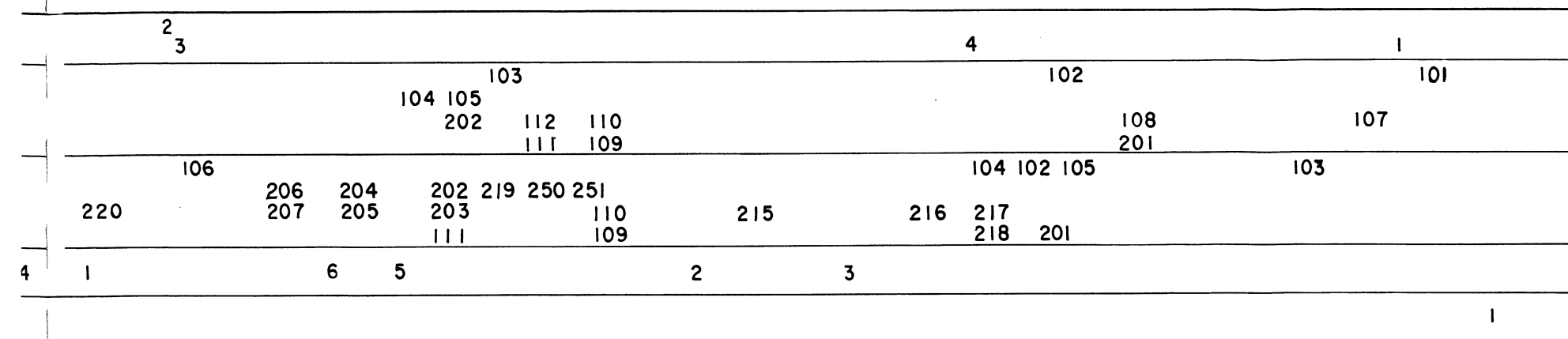
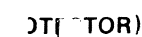
Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P (+15V)
7	2SA1048	O.V.P (+18V)
8	2SC2785	O.V.P (+15V)
9	2SA1048	O.V.P (-15V)
10	2SC2785	O.V.P (-18V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

PA board (HIGH VOLTAGE PROTECTOR)



PA BOARD

1C1	uPC1394C	P.W.M CONTROL
2	NJM2903D	COMPARATOR
3	NJM2903D	COMPARATOR
4	TLO82CP	BUFFER & COMPARATOR
Q101	2SA1156	O.V.P
102	2SC2555	DC-DC CONV.
103	2SD1556	HV CONV.
104	2SC3675	G2 REGULATOR
105	2SC2785	G2 REGULATOR
107	2SC2688	DC-DC CONV. DRIVE
108	2SC2688	HV CONV. DRIVE
109	2SA1175	HV CONV. DRIVE
110	2SC2785	HV CONV. DRIVE
111	2SC2785	HV CONV. DRIVE
112	2SC2785	HV CONV. DRIVE
201	2SC2785	CRT PROTECTOR
202	2SC2785	CRT PROTECTOR
D102	RU-1A	DC-DC CONV.
103	RU-1A	DC-DC CONV.
104	RU-1A	DC-DC CONV.
105	RU-1A	HV CONV. DRIVE
106	V11N	RECTIFIER
107	RD6.2EB2	G2 CONTROL
109	1SS119	HV CONV. DRIVE
110	1SS119	HV CONV. DRIVE
111	RD3.0ESB2	HV CONV. DRIVE
201	1SS119	PROTECTOR
202	RD3.9EB2	CRT PROTECTOR
203	1SS148	CRT PROTECTOR
204	CRO2AM	PROTECTOR
205	CRO2AM	PROTECTOR
206	1SS119	MIX
207	1SS119	MIX
214	HZ1A2L	HV. PROT
215	uPC574J	HV PROT. REF.
216	uPC574J	HV PROT. REF.
217	1SS119	PROT
218	1SS119	PROT
219	1SS119	PROT
220	1SS119	PROT
250	1SS119	PROT
251	1SS119	PROT



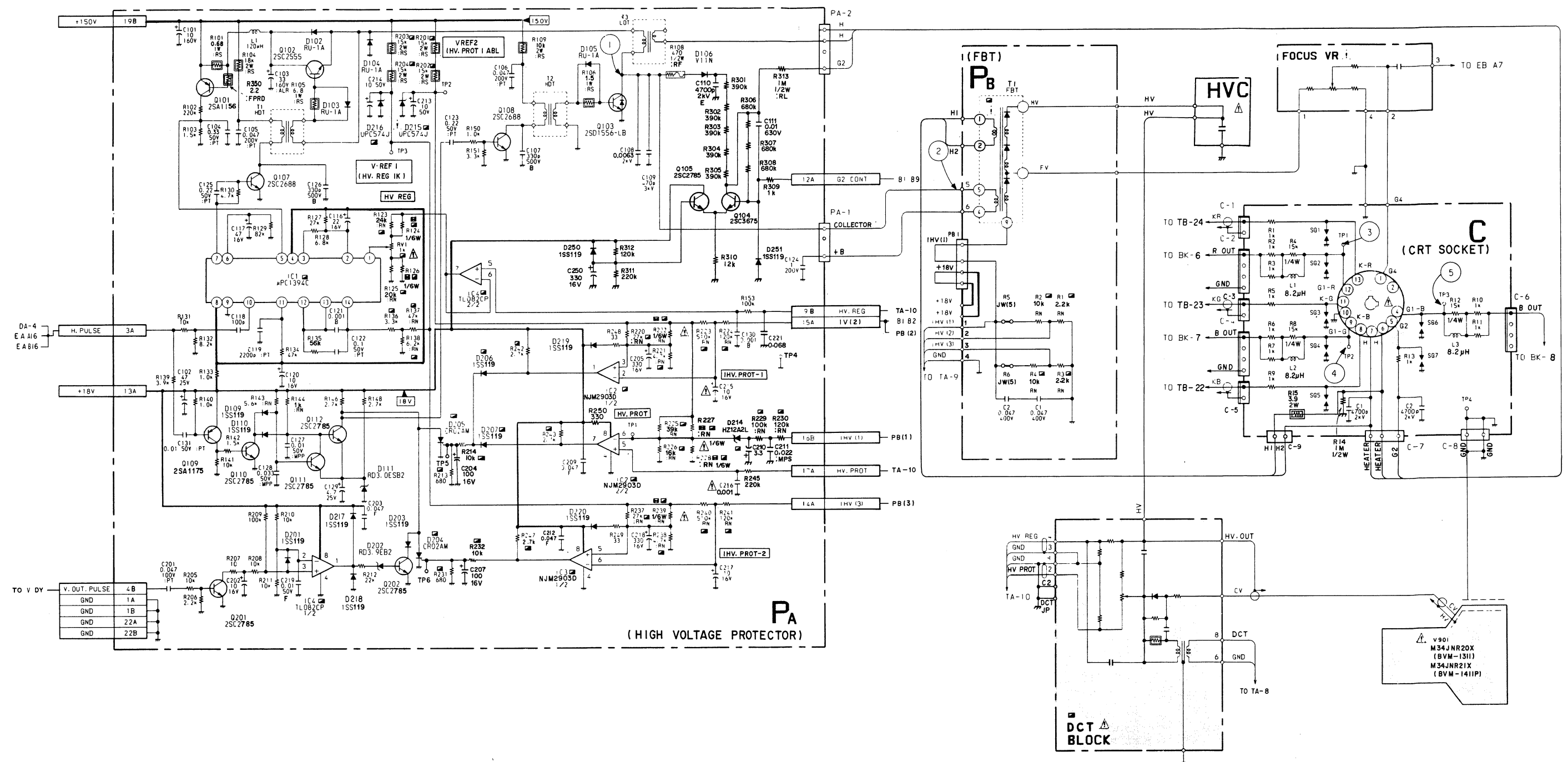
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

C, PA, PB	C, PA, PB
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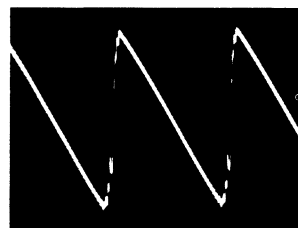
C board (CRT SOCKET)

PA board (HIGH VOLTAGE PROTECTOR)

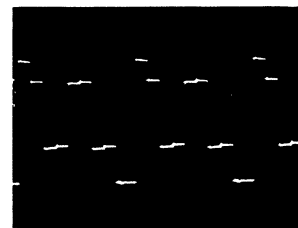
PB board (FBT)



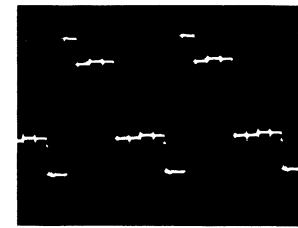
① 1.120Vp-p (H)



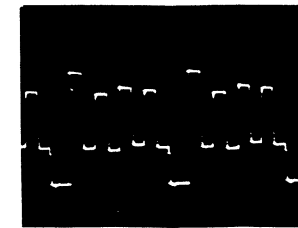
② 2.4Ap-p (H)
5-77



③ 64Vp-p (H)



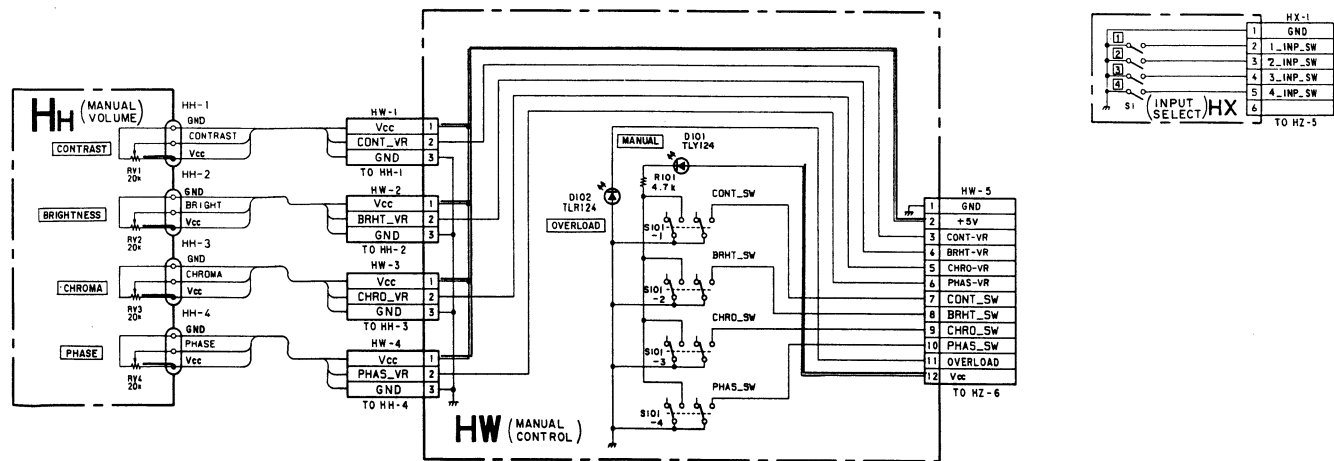
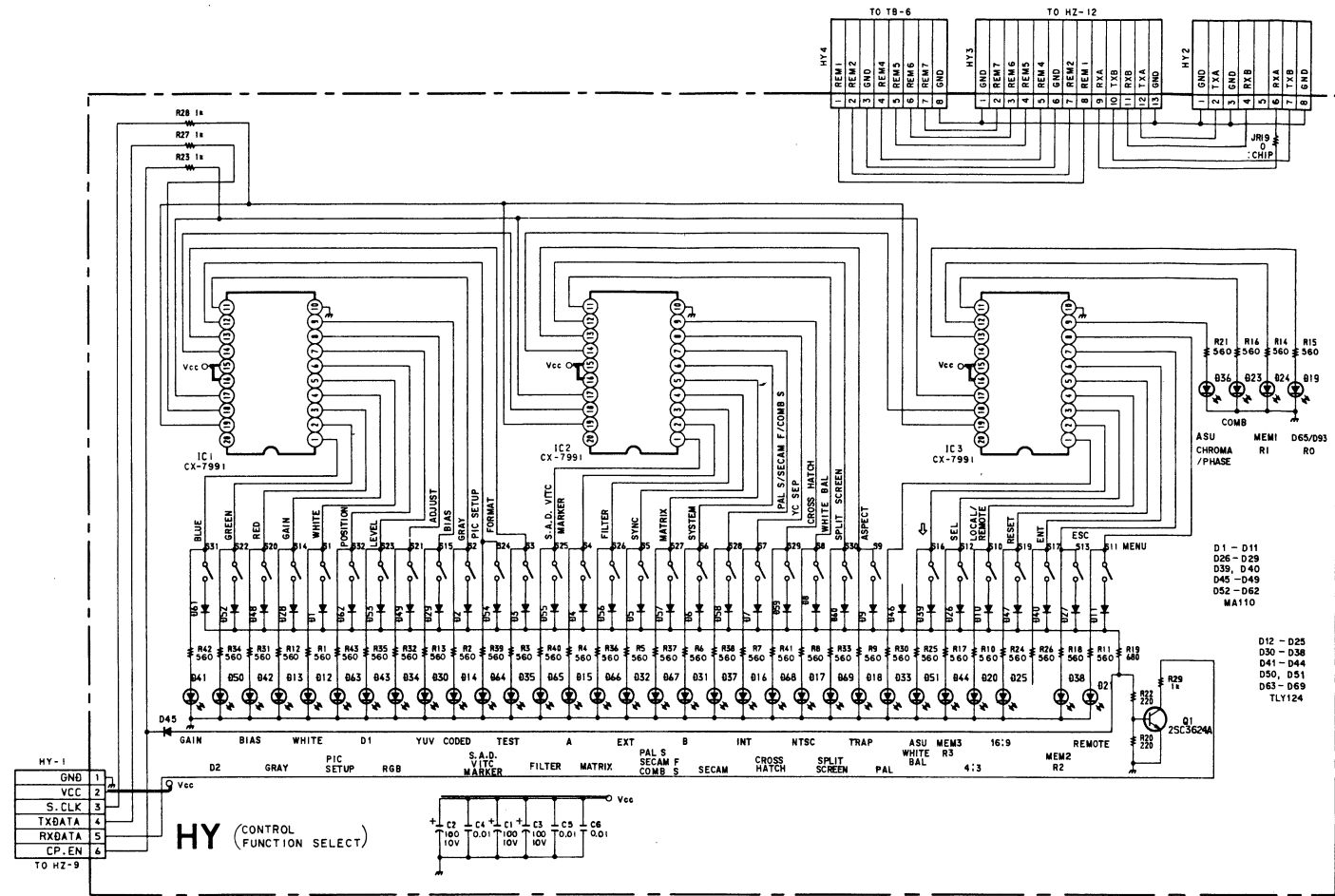
④ $68V_{p-p} (H)$



⑤ 61Vp-p (H)
5-78

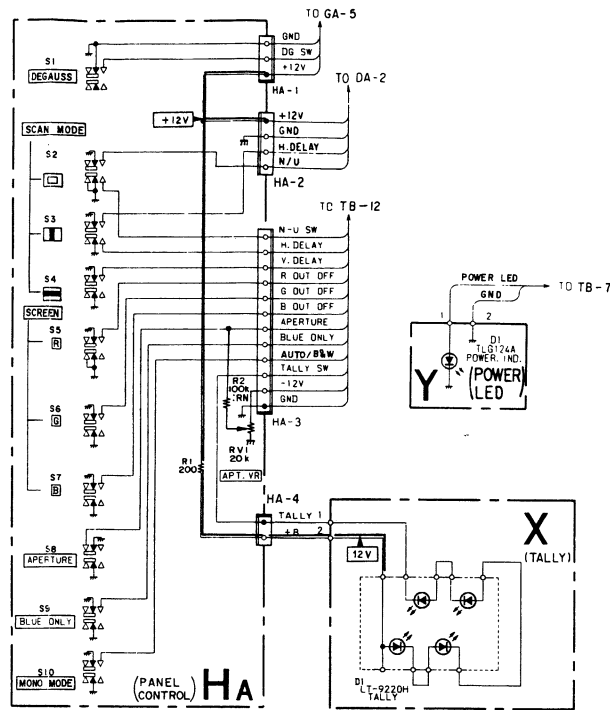
HA, HH, HW, HX, HY, X, Y HA, HH, HW, HX, HY, X, Y

HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), X board (TALLY), Y board (POWER LED)



HW BOARD

D101	TLR124	INDICATOR
102	TLR124	INDICATOR



HY BOARD

IC 1	CX-7991	KEY SCAN	D 35	TLY124	INDICATOR
2	CX-7991	KEY SCAN	36	TLY124	INDICATOR
3	CX-7991	KEY SCAN	37	TLY124	INDICATOR
			38	TLY124	INDICATOR
0 1	2SC3624A	KEY DETECTION	39	MA110	PROTECTION
			40	MA110	PROTECTION
D 1	MA110	PROTECTION	41	TLY124	INDICATOR
2	MA110	PROTECTION	42	TLY124	INDICATOR
3	MA110	PROTECTION	43	TLY124	INDICATOR
4	MA110	PROTECTION	44	TLY124	INDICATOR
5	MA110	PROTECTION	45	MA110	PROTECTION
6	MA110	PROTECTION	46	MA110	PROTECTION
7	MA110	PROTECTION	47	MA110	PROTECTION
8	MA110	PROTECTION	48	MA110	PROTECTION
9	MA110	PROTECTION	49	MA110	PROTECTION
10	MA110	PROTECTION	50	TLY124	INDICATOR
11	MA110	PROTECTION	51	TLY124	INDICATOR
12	TLY124	PROTECTION	52	MA110	PROTECTION
13	TLY124	INDICATOR	53	MA110	PROTECTION
14	TLY124	INDICATOR	54	MA110	PROTECTION
15	TLY124	INDICATOR	55	MA110	PROTECTION
16	TLY124	INDICATOR	56	MA110	PROTECTION
17	TLY124	INDICATOR	57	MA110	PROTECTION
18	TLY124	INDICATOR	58	MA110	PROTECTION
19	TLY124	INDICATOR	59	MA110	PROTECTION
20	TLY124	INDICATOR	60	MA110	PROTECTION
21	TLY124	INDICATOR	61	MA110	PROTECTION
22	TLY124	INDICATOR	62	MA110	PROTECTION
23	TLY124	INDICATOR	63	TLY124	PROTECTION
24	TLY124	INDICATOR	64	TLY124	INDICATOR
25	TLY124	INDICATOR	65	TLY124	INDICATOR
26	MA110	PROTECTION	66	TLY124	INDICATOR
27	MA110	PROTECTION	67	TLY124	INDICATOR
28	MA110	PROTECTION	68	TLY124	INDICATOR
29	MA110	PROTECTION	69	TLY124	INDICATOR
30	TLY124	INDICATOR			
31	TLY124	INDICATOR			
32	TLY124	INDICATOR			
33	TLY124	INDICATOR			
34	TLY124	INDICATOR			

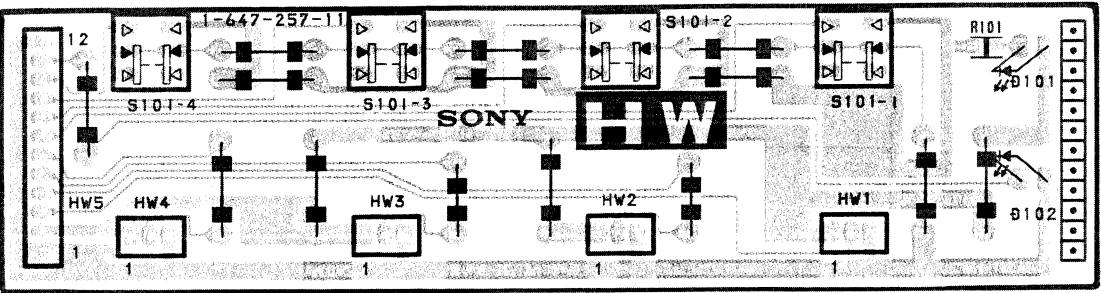
Y BOARD

D1	TLG124A	POWER INDICATOR
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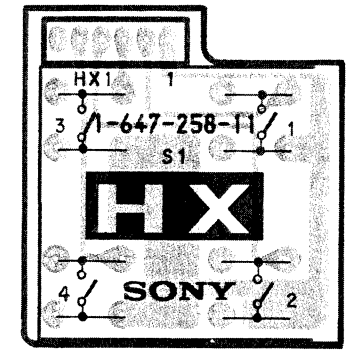
X BOARD

D1	LT-9220H	TALLY LAMP
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HW board (MANUAL CONTROL)



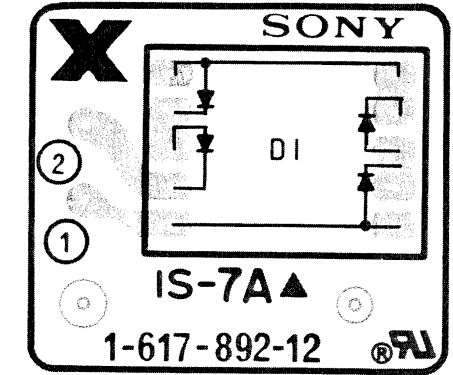
HX board (INPUT SELECT)



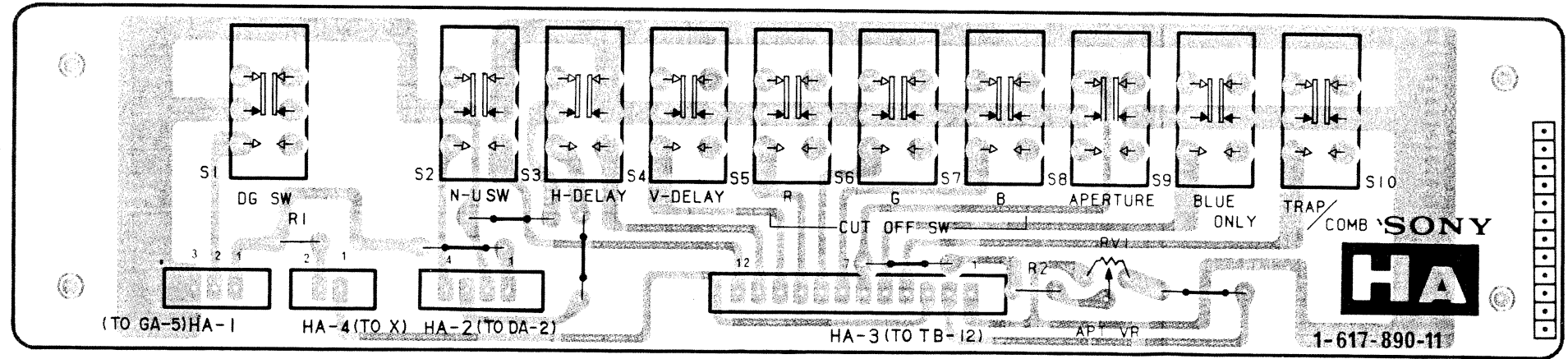
HH board (MANUAL VOLUME)



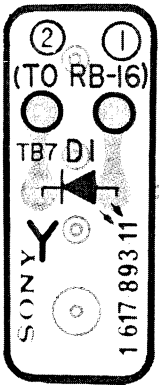
X board (TALLY)



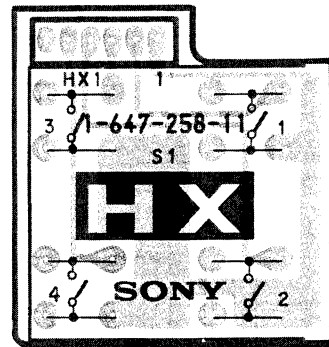
HA board (PANEL CONTROL)



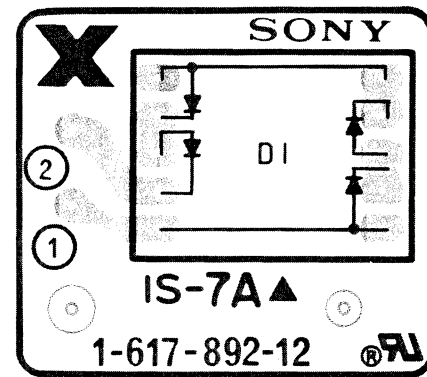
Y board (POWER LED)



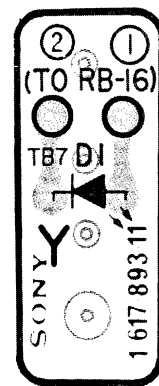
HX board (INPUT SELECT)



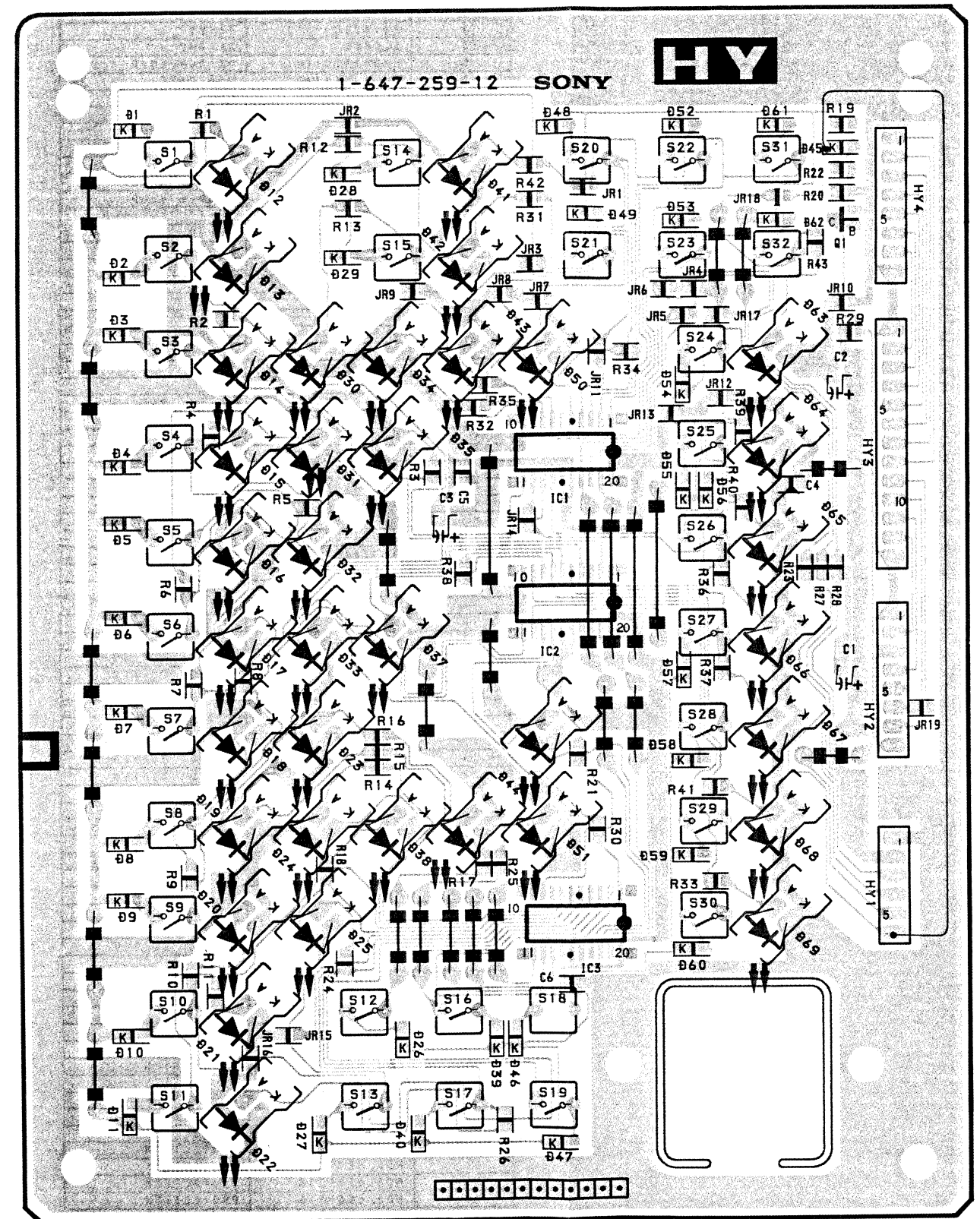
X board (TALLY)



Y board (POWER LED)



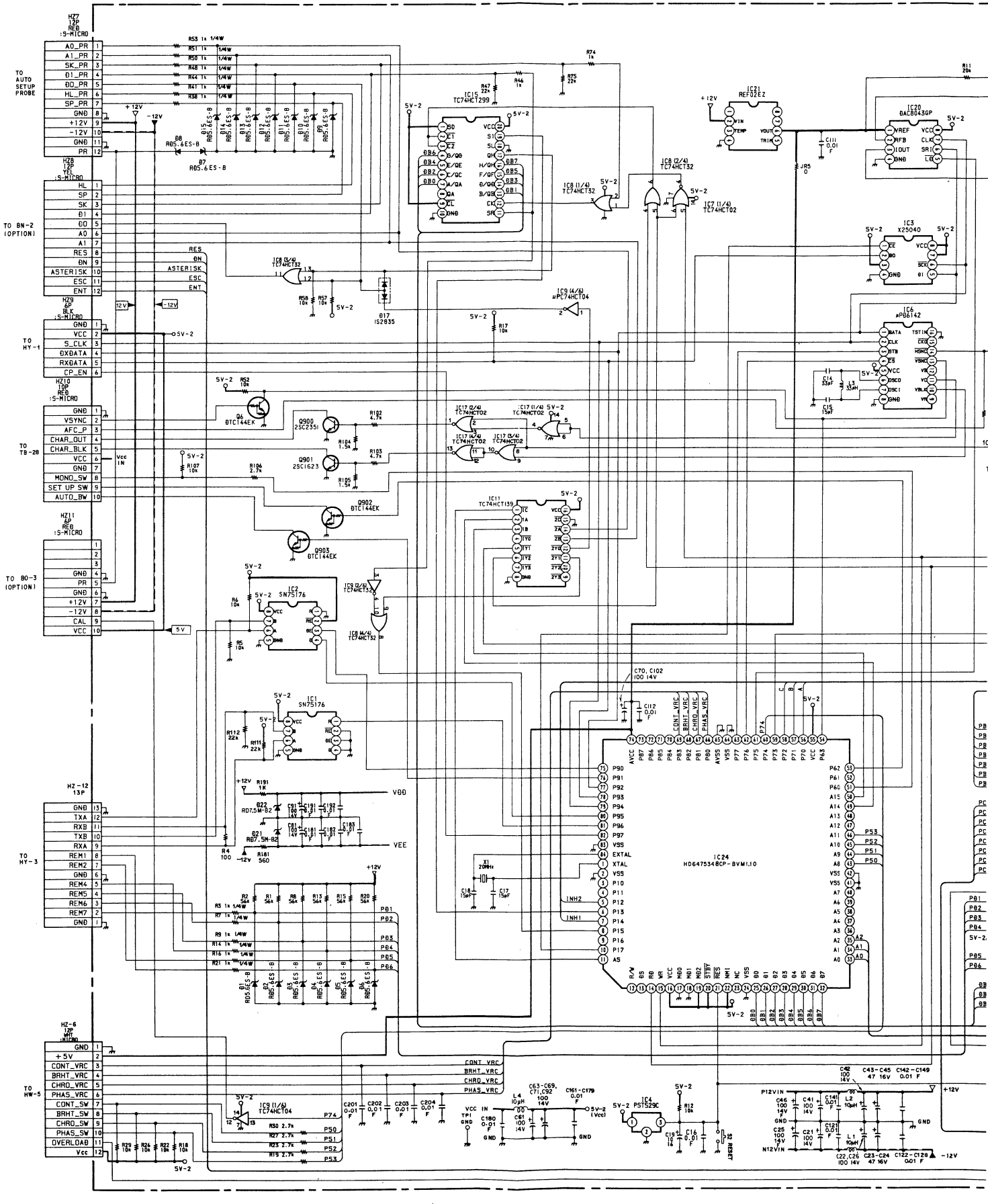
HY board (CONTROL FUNCTION SELECT)

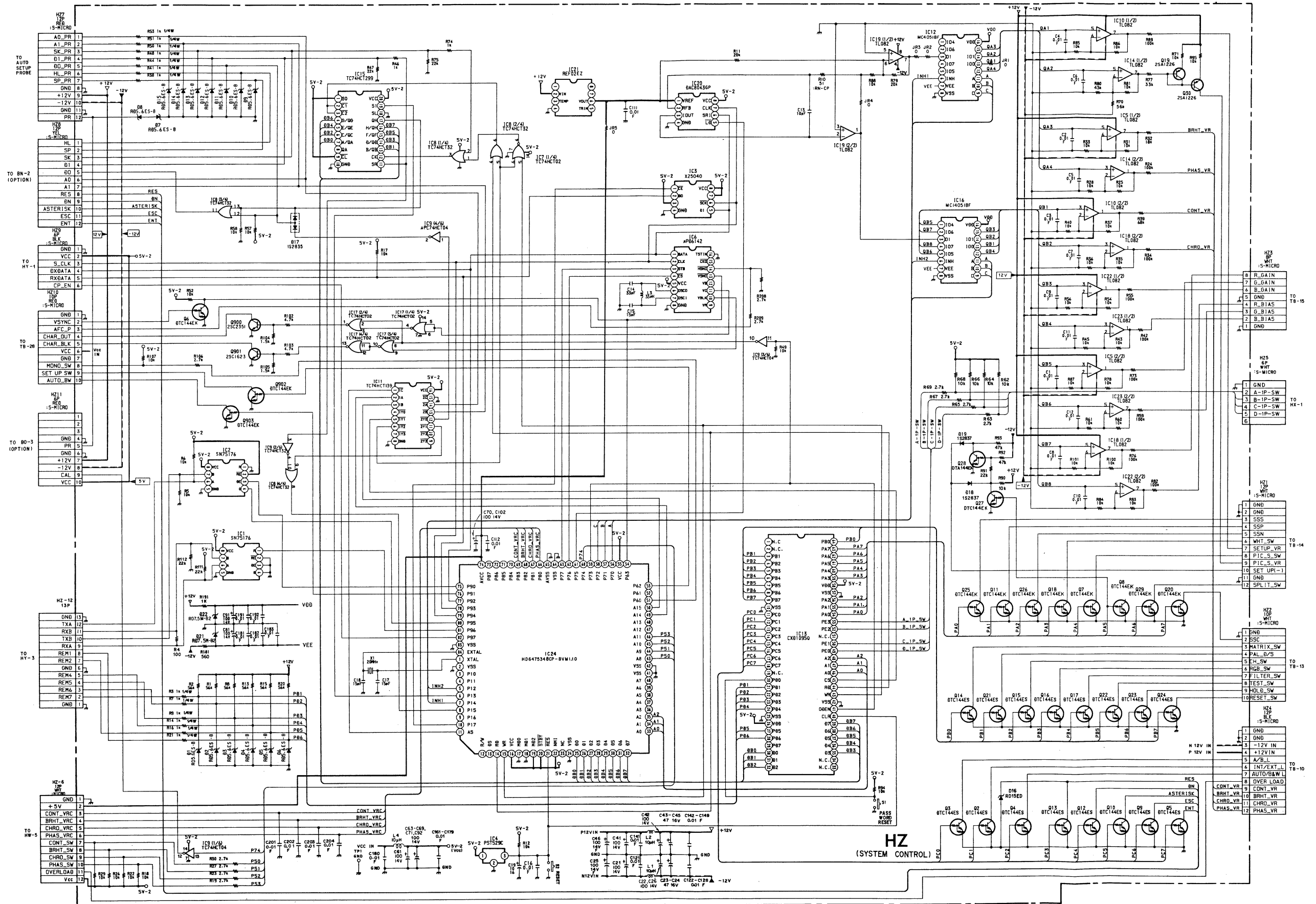


HZ board (SYSTEM CONTROL)

HZ BOARD

IC 1	SN75176BP	RECEIVER
2	SN75176BP	TRANSMITTER
3	X25040	NV RAM
4	PST529C	RESET
5	TL082M	OP AMP
6	UPD6142G-101	ON SCREEN D
7	TC74HCT02AF	NOR GATE
8	TC74HCT32AF	OR GATE
9	TC74HCT04AF	INVERTOR
10	TL082M	SAMPLE HOLD
11	TC74HCT139AF	DECODER
12	MC14051BF	DE-MULTIPLEXER
13	CXD10950	I/O EXPANDER
14	TL082M	SAMPLE HOLD
15	TC74HC299AF	SHIFT REGISTER
16	MC14051BF	DE-MULTIPLEXER
17	TC74HCT02AF	NOR GATE
18	TL082M	SAMPLE HOLD
19	TL082M	SAMPLE HOLD
20	DAC8043GP	D/A CONNECTOR
21	REF02EZ	REF. VOLTAGE
22	TL082M	SAMPLE HOLD
23	TL082M	SAMPLE HOLD
24	HD6475368CP-BVM1.10	CPU
0 2	DTC144EK	OUTPUT BUFFER
3	DTC144EK	OUTPUT BUFFER
4	DTC144EK	OUTPUT BUFFER
5	DTC144EK	OUTPUT BUFFER
6	DTC144EK	OUTPUT BUFFER
7	DTC144EK	OUTPUT BUFFER
8	DTC144EK	OUTPUT BUFFER
9	DTC144EK	OUTPUT BUFFER
10	DTC144EK	OUTPUT BUFFER
11	DTC144EK	OUTPUT BUFFER
12	DTC144EK	OUTPUT BUFFER
13	DTC144EK	OUTPUT BUFFER
14	DTC144EK	OUTPUT BUFFER
15	DTC144EK	OUTPUT BUFFER
16	DTC144EK	OUTPUT BUFFER
17	DTC144EK	OUTPUT BUFFER
18	DTC144EK	OUTPUT BUFFER
19	DTC144EK	OUTPUT BUFFER
20	DTC144EK	OUTPUT BUFFER
21	DTC144EK	OUTPUT BUFFER
22	DTC144EK	OUTPUT BUFFER
23	DTC144EK	OUTPUT BUFFER
24	DTC144EK	OUTPUT BUFFER
25	DTC144EK	OUTPUT BUFFER
26	DTC144EK	OUTPUT BUFFER
27	DTC144EK	OUTPUT BUFFER
28	DTC144EK	OUTPUT BUFFER
29	DTC144EK	OUTPUT BUFFER
30	DTC144EK	OUTPUT BUFFER
900	2SC1623	OUTPUT BUFFER
901	2SC1623	OUTPUT BUFFER
902	DTC144EK	OUTPUT BUFFER
903	DTC144EK	OUTPUT BUFFER
D 11	RD5.6ES-T1B	PROTECTION
22	RD5.6ES-T1B	PROTECTION
33	RD5.6ES-T1B	PROTECTION
44	RD5.6ES-T1B	PROTECTION
55	RD5.6ES-T1B	PROTECTION
66	RD5.6ES-T1B	PROTECTION
77	RD5.6ES-T1B	PROTECTION
88	RD5.6ES-T1B	PROTECTION
99	RD5.6ES-T1B	PROTECTION
10	RD5.6ES-T1B	PROTECTION
11	RD5.6ES-T1B	PROTECTION
12	RD5.6ES-T1B	PROTECTION
13	RD5.6ES-T1B	PROTECTION
14	RD5.6ES-T1B	PROTECTION
15	RD5.6ES-T1B	PROTECTION
16	RD5.6ES-T1B	PROTECTION
17	RD5.6ES-T1B	PROTECTION
18	RD5.6ES-T1B	PROTECTION
19	RD5.6ES-T1B	PROTECTION
21	RD7.5M-T1B2	-7.5V REG
22	RD7.5M-T1B2	+7.5V REG

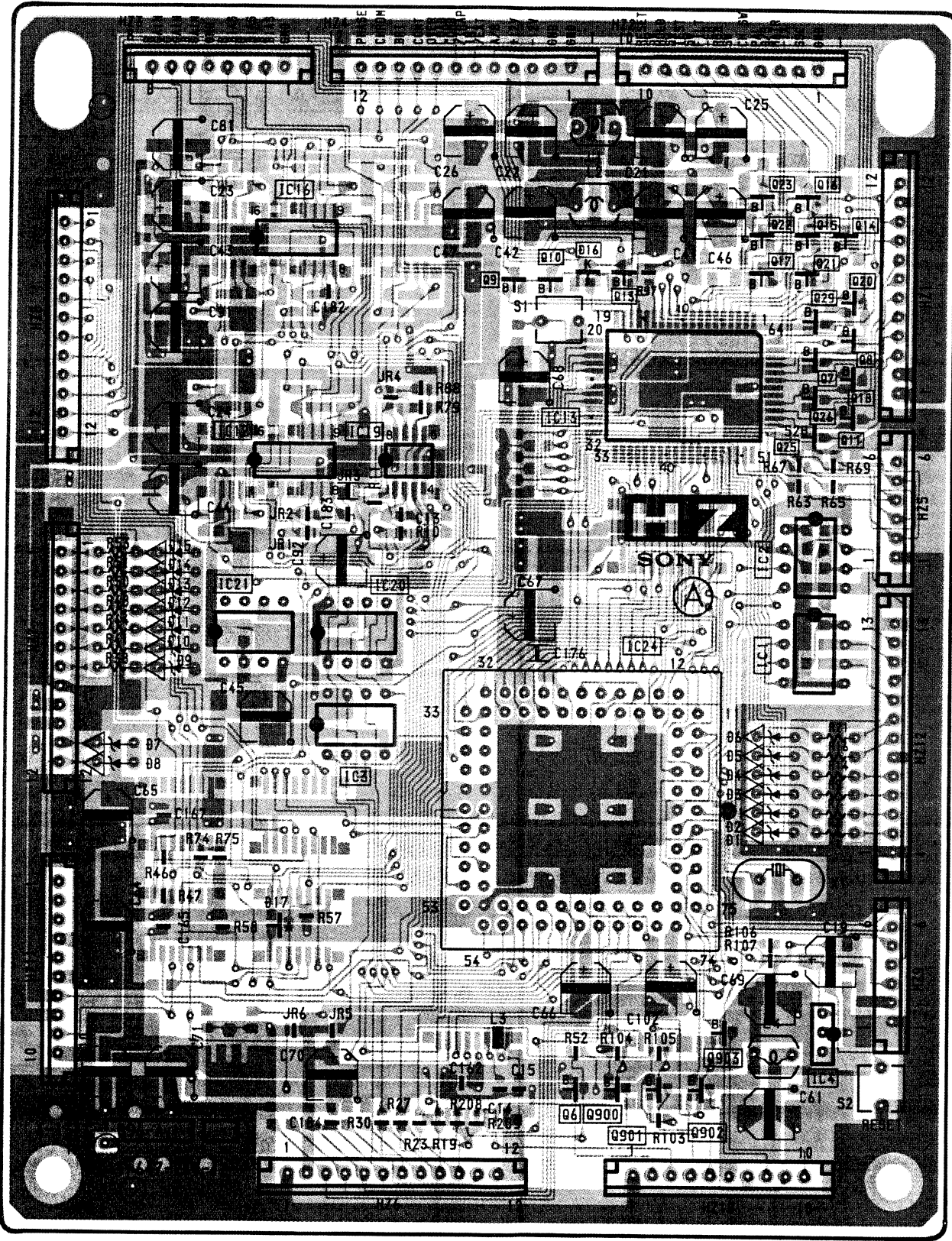




HZ board (SYSTEM CONTROL)

— CONDUCTOR SIDE —

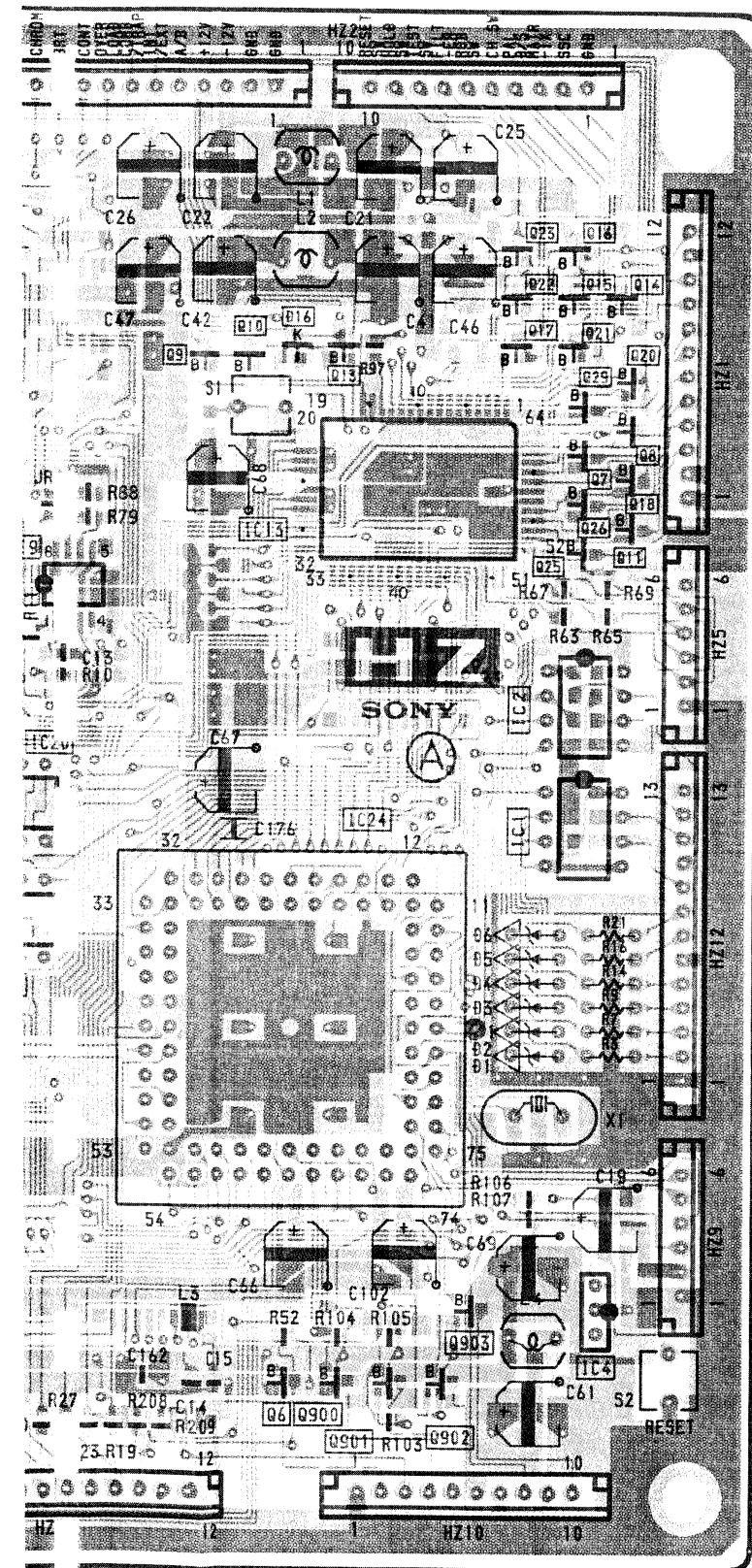
IC	Q	D,TP
16	23 16 22 15 14 9 10 13 17 21 20 29 8 7 18 26 11 25	16
13		
12 19		
2		15 14 13 12 11 10 9
21 20 1		7 8 6 5 4 3 2 1
3		17
24		
4	903 6 900 901 902	TP1



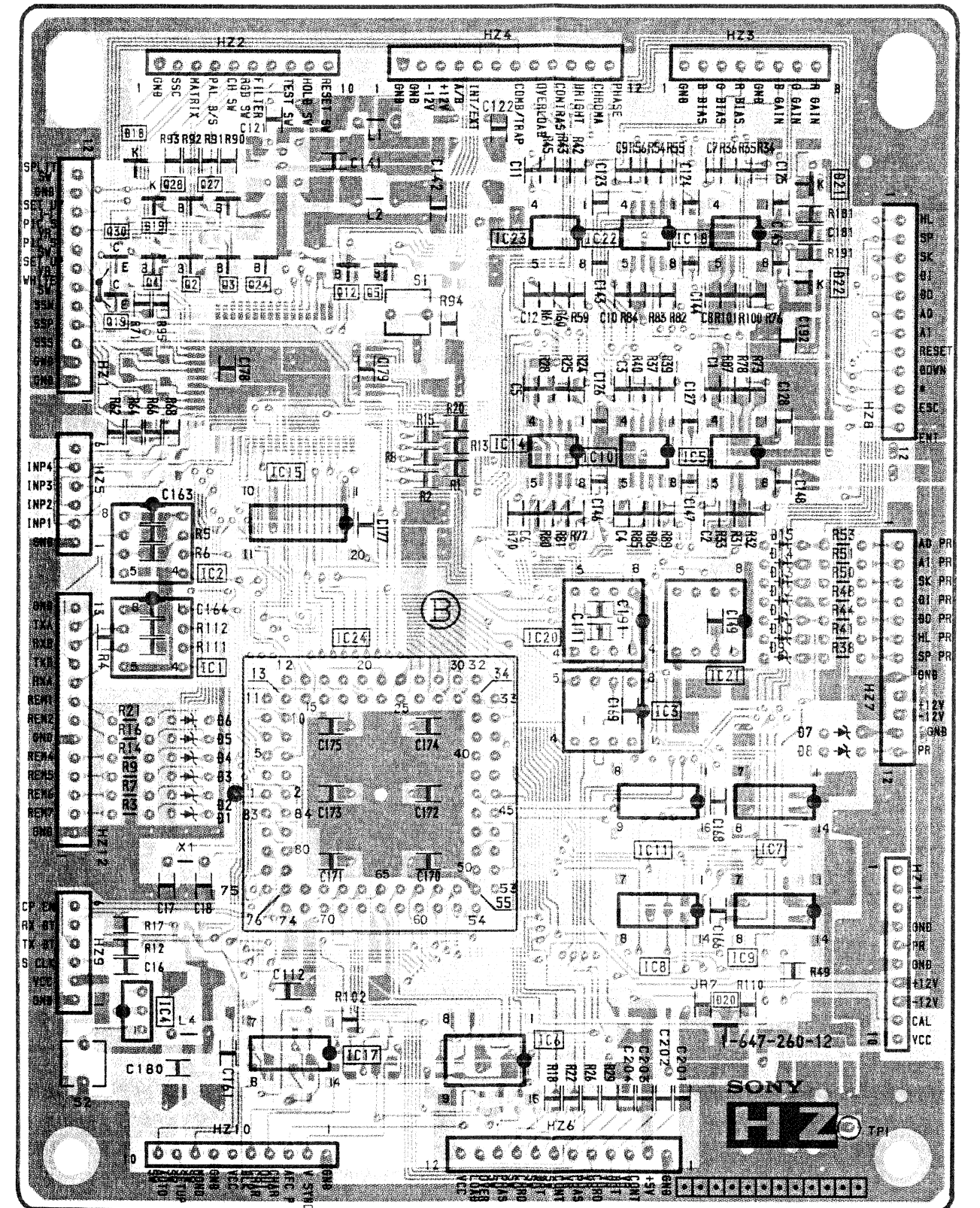
— COMPONENT SIDE —

IC	Q	D,TP
23 22 18	28,27 30 4 2 3 24 19 12 5	18 19 21 22
14 10 5		
2 15		15 14 13 12 11 10 9
1 20 21		6 5 4 3 2 1 7 8
3		
24 11 7		
8 9		20
4 17 6		TP1

— COMPONENT SIDE —

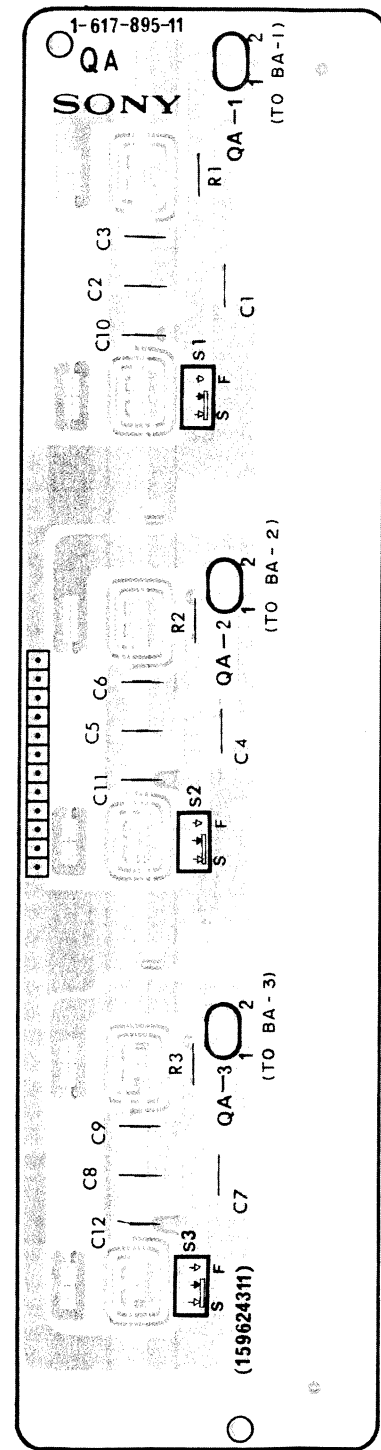


IC	Q	D, TP
23 22 18	28, 27	18 21
	30 4 2 3 24	
	19	22
14 10 5		
2 15		15
		14
		13
1	20 21	12
		11
		10
		9
	3	7
		8
24	11 7	
	8 9	
4		20
17 6		
		TP1

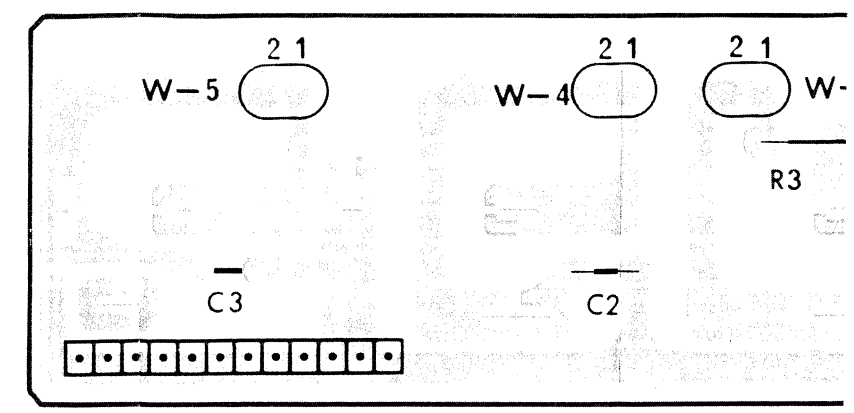


- Pattern from the side which enables seeing.
- Pattern of the rear side.

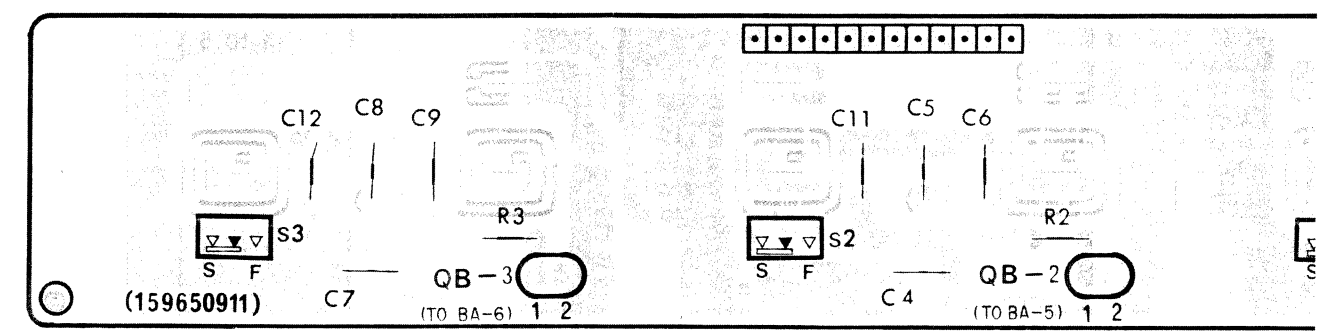
QA board (COMPOSITE VIDEO INPUT)



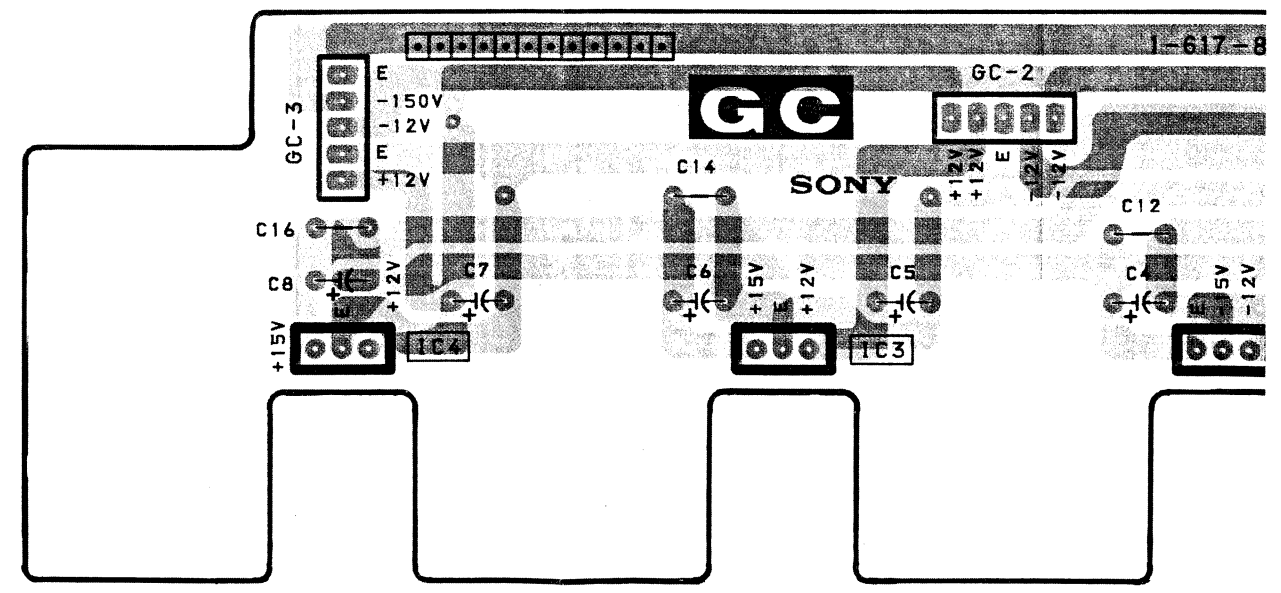
W board (RGB/COMPONENT)



QB board (RGB/COMPONENT INPUT)

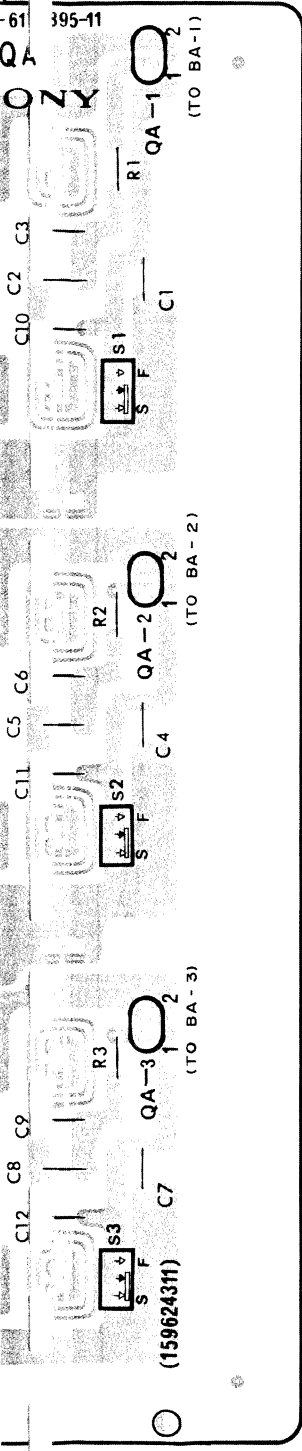


GC board (REG)

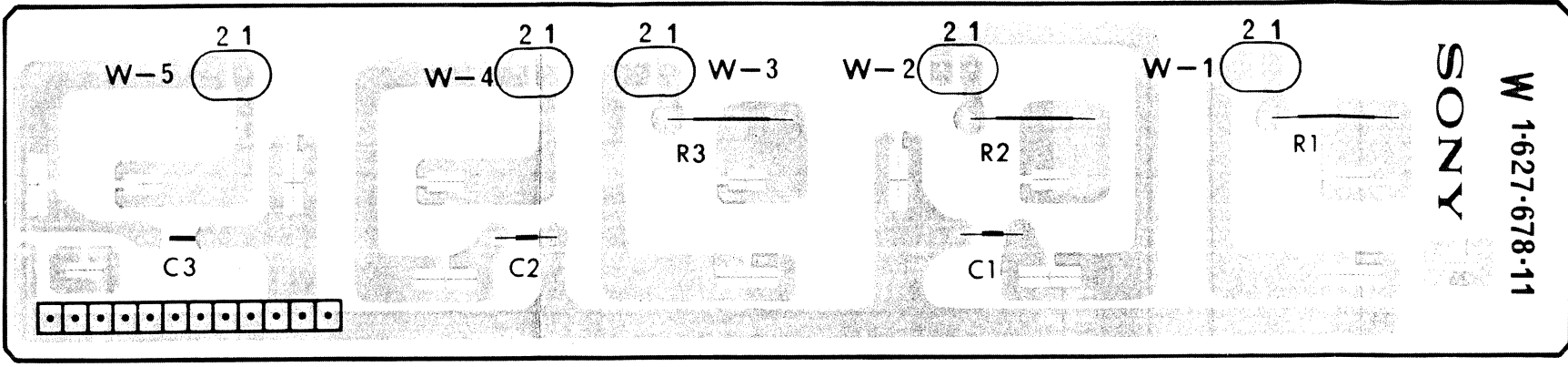
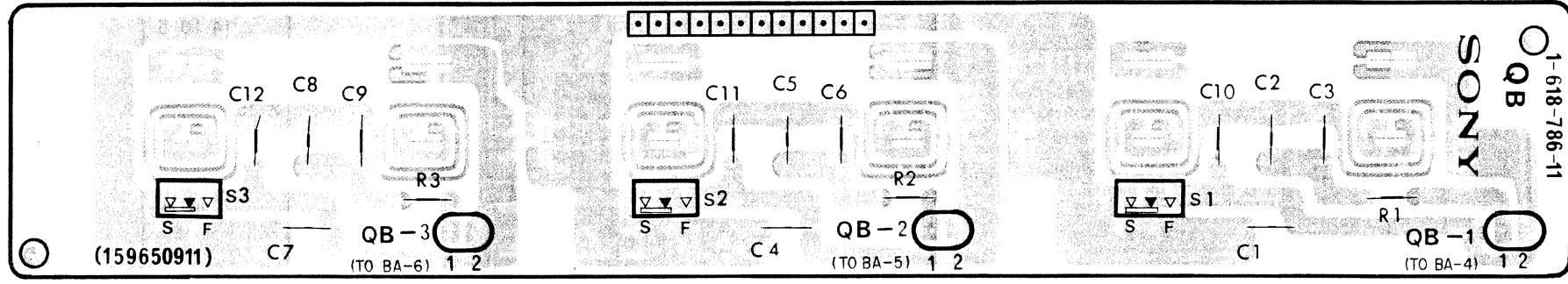


GC, QA, QB, V, W	GC, QA, QB, V, W
------------------	------------------

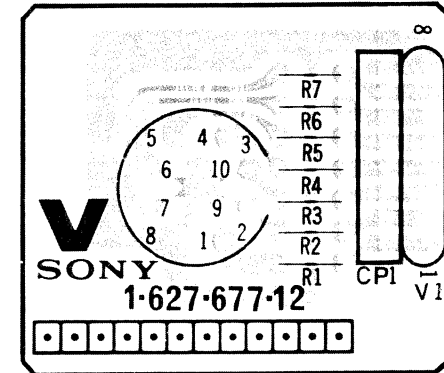
Q. board (COMPOSITE VIDEO INPUT)



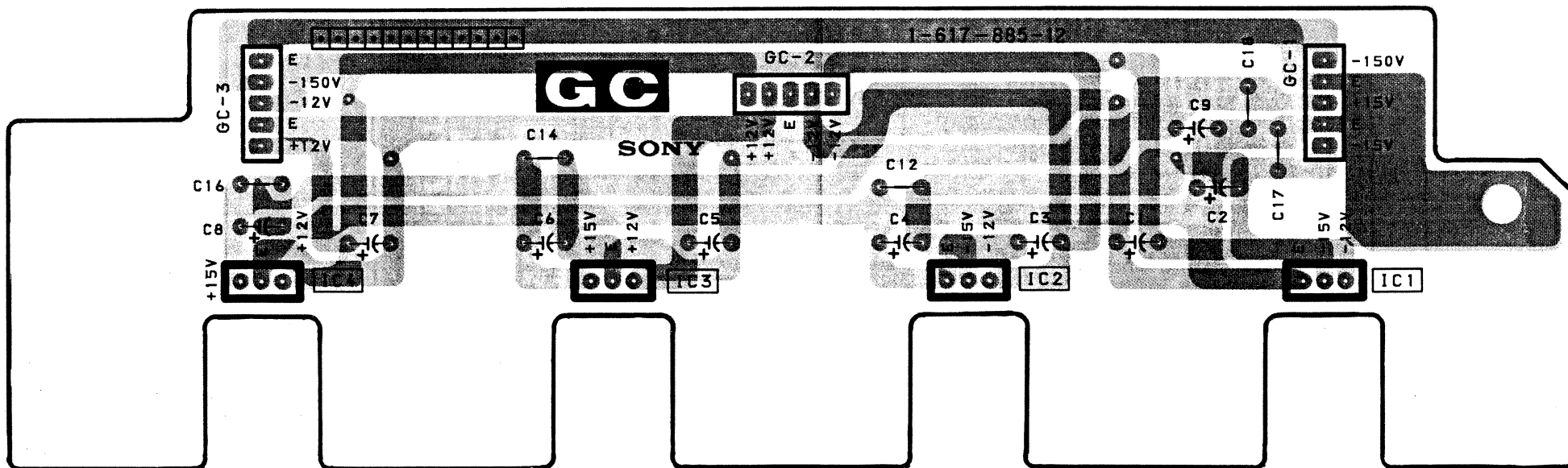
W board (RGB/COMPONENT)

**QB board (RGB/COMPONENT INPUT)**

V board (REMOTE)



GC board (REG)

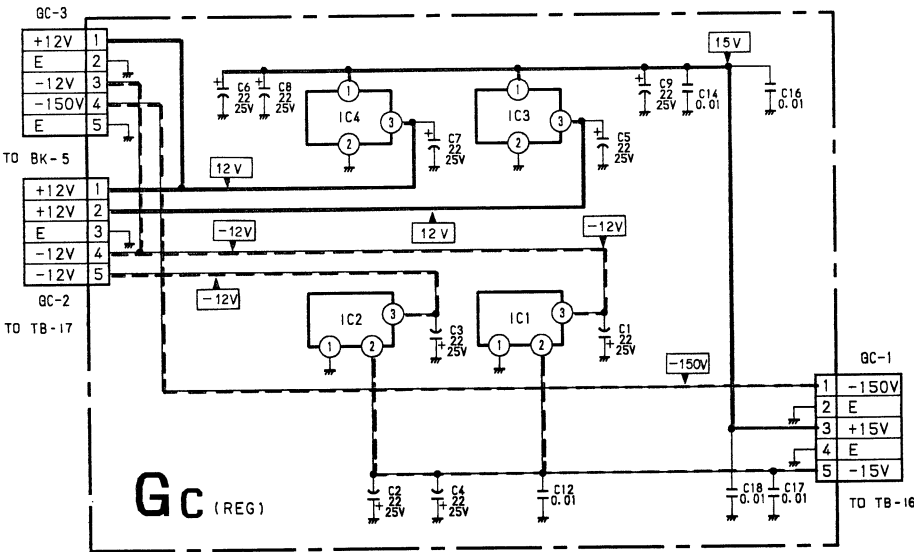
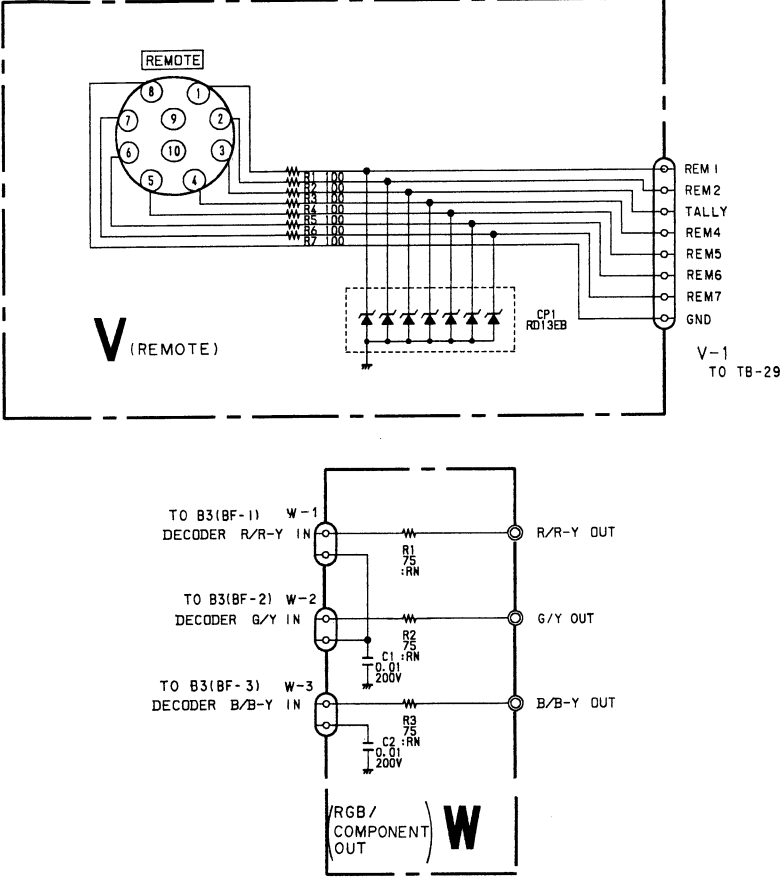
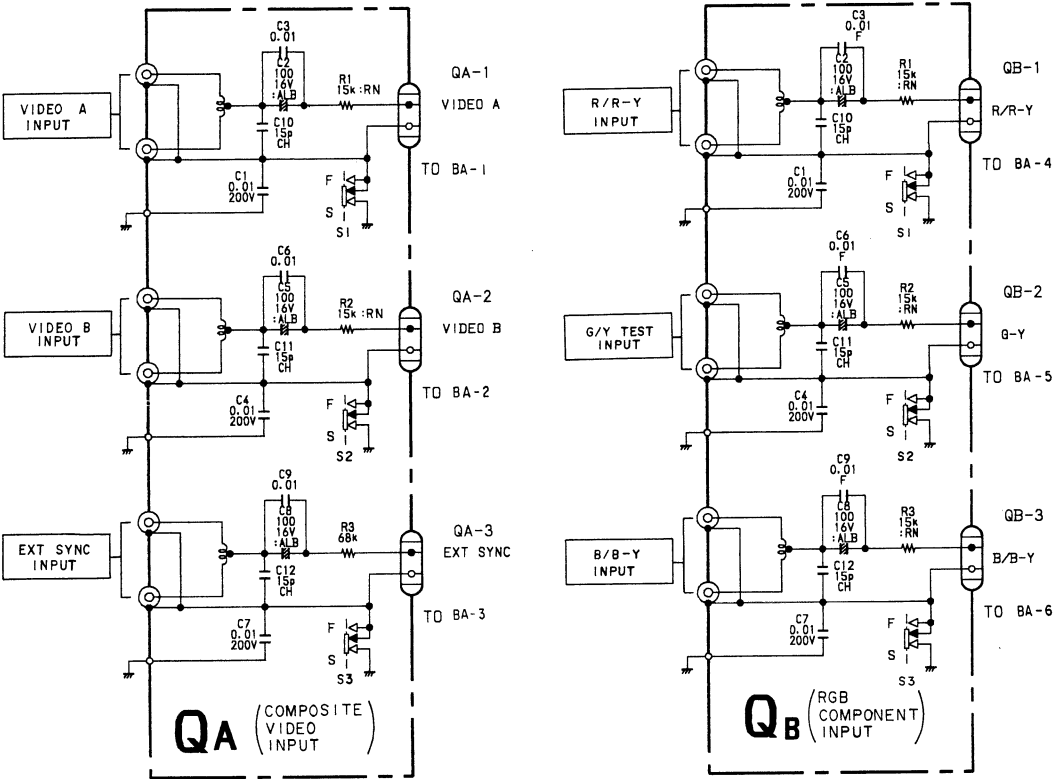


-  : Pattern from the side which enables seeing.
- : Pattern of the rear side.

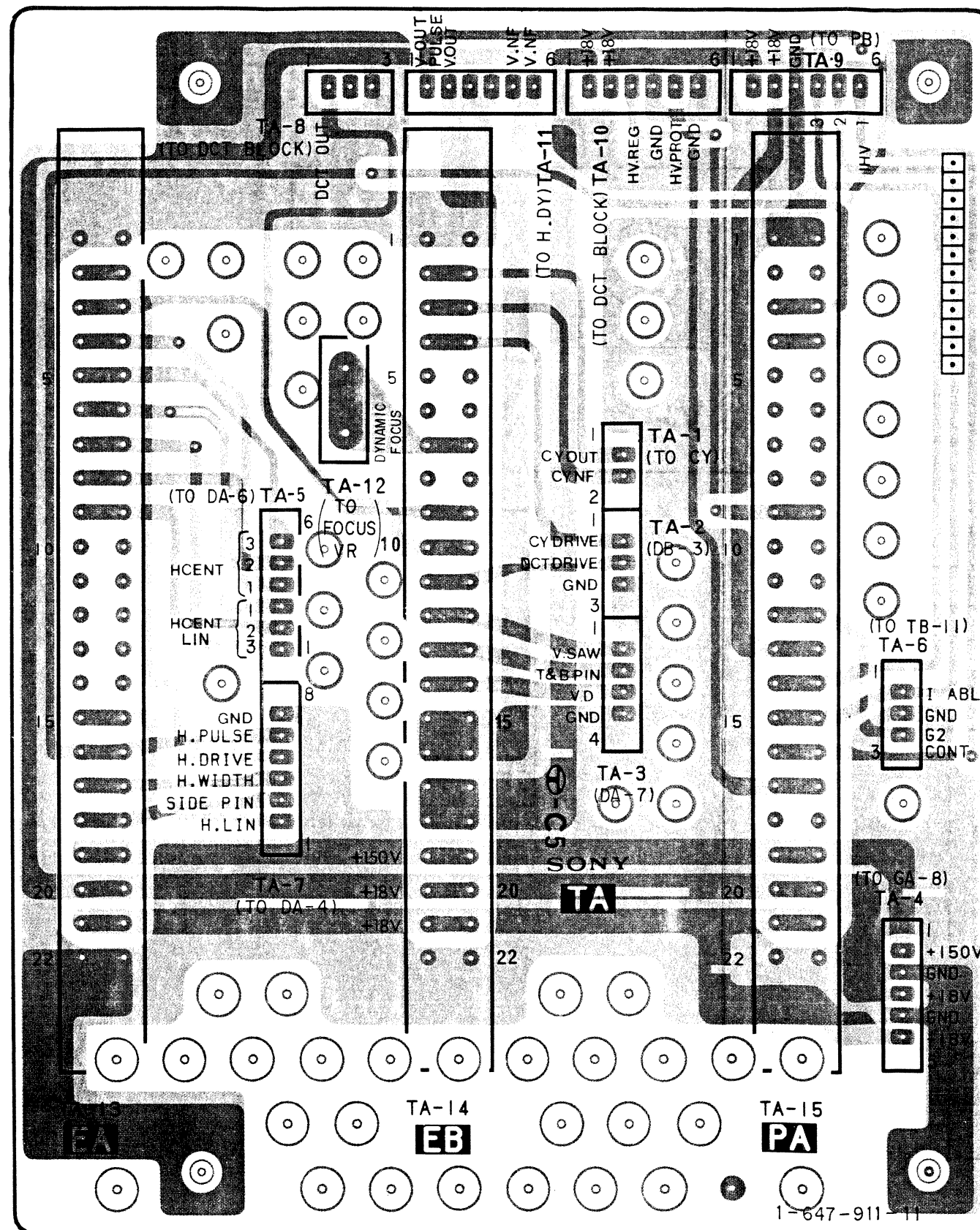
GC, QA, QB, V, W GC, QA, QB, V, W

GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)
V board (REMOTE) W board (RGB/COMPONENT)

GC BOARD		
IC 1	uPD7912H	-12V REG
2	uPD7912H	-12V REG
3	uPC2412HF	+12V REG
4	uPC2412HF	+12V REG

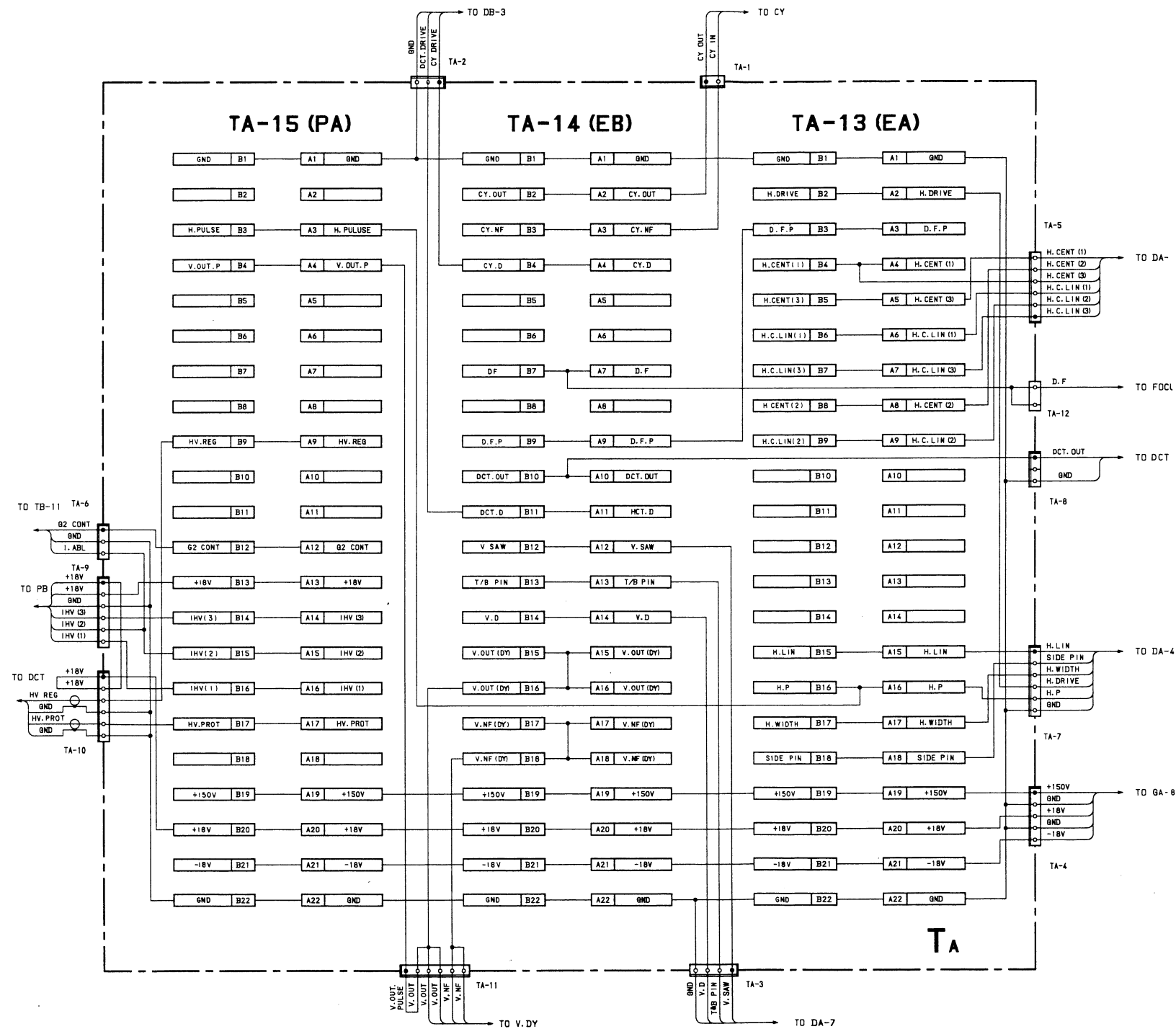


TA board (MOTHER BOARD)

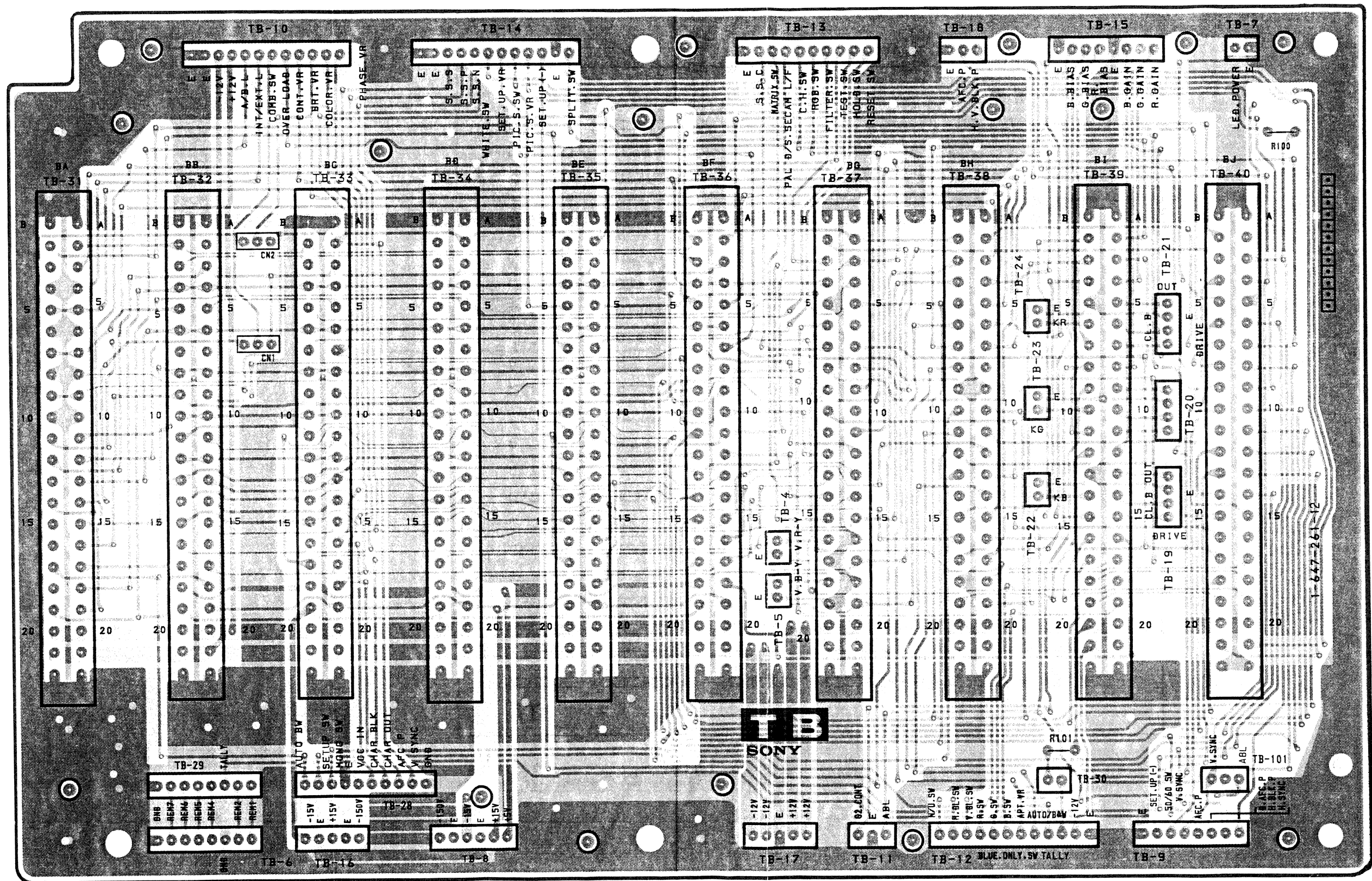


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

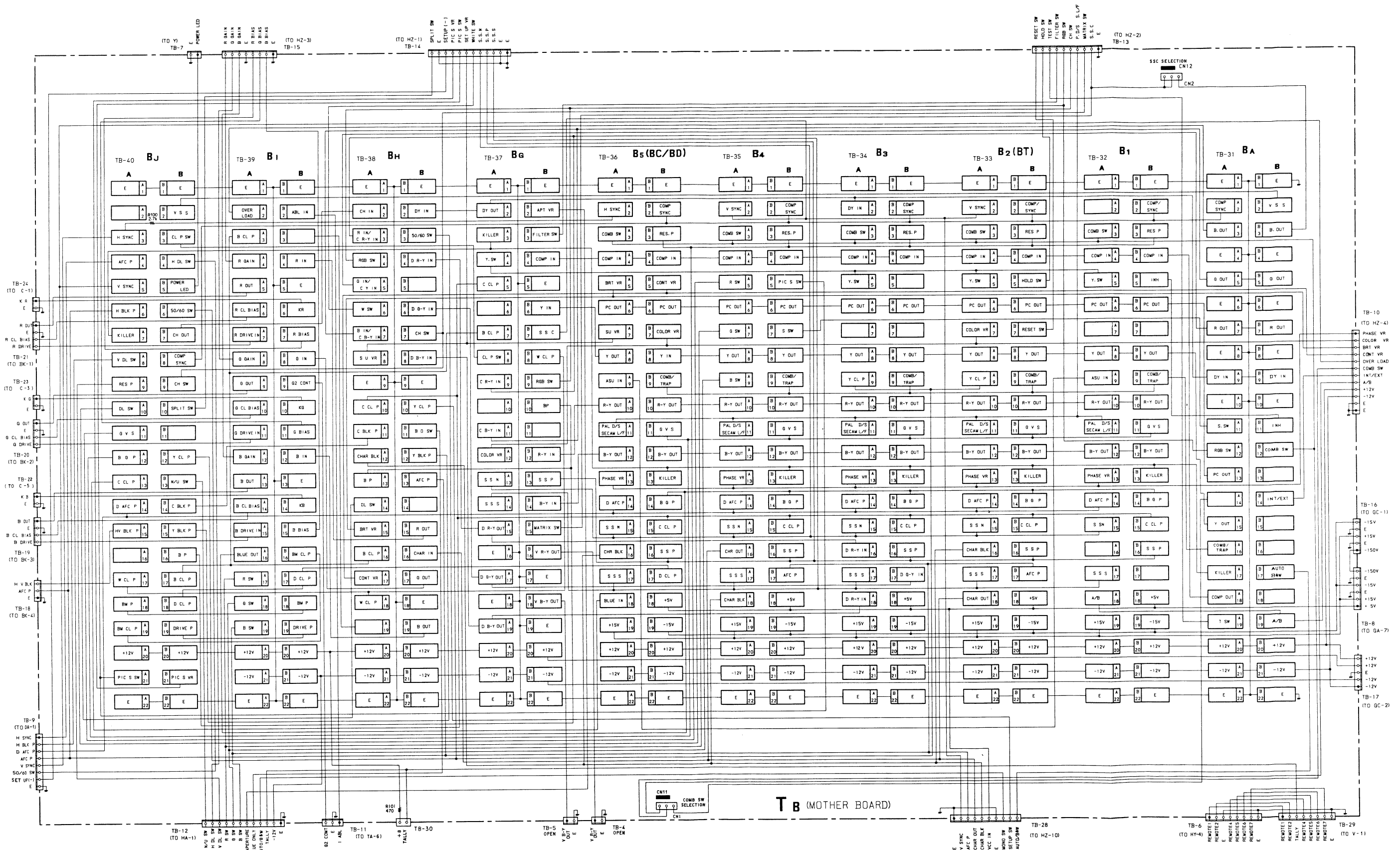
TA board (MOTHER BOARD)



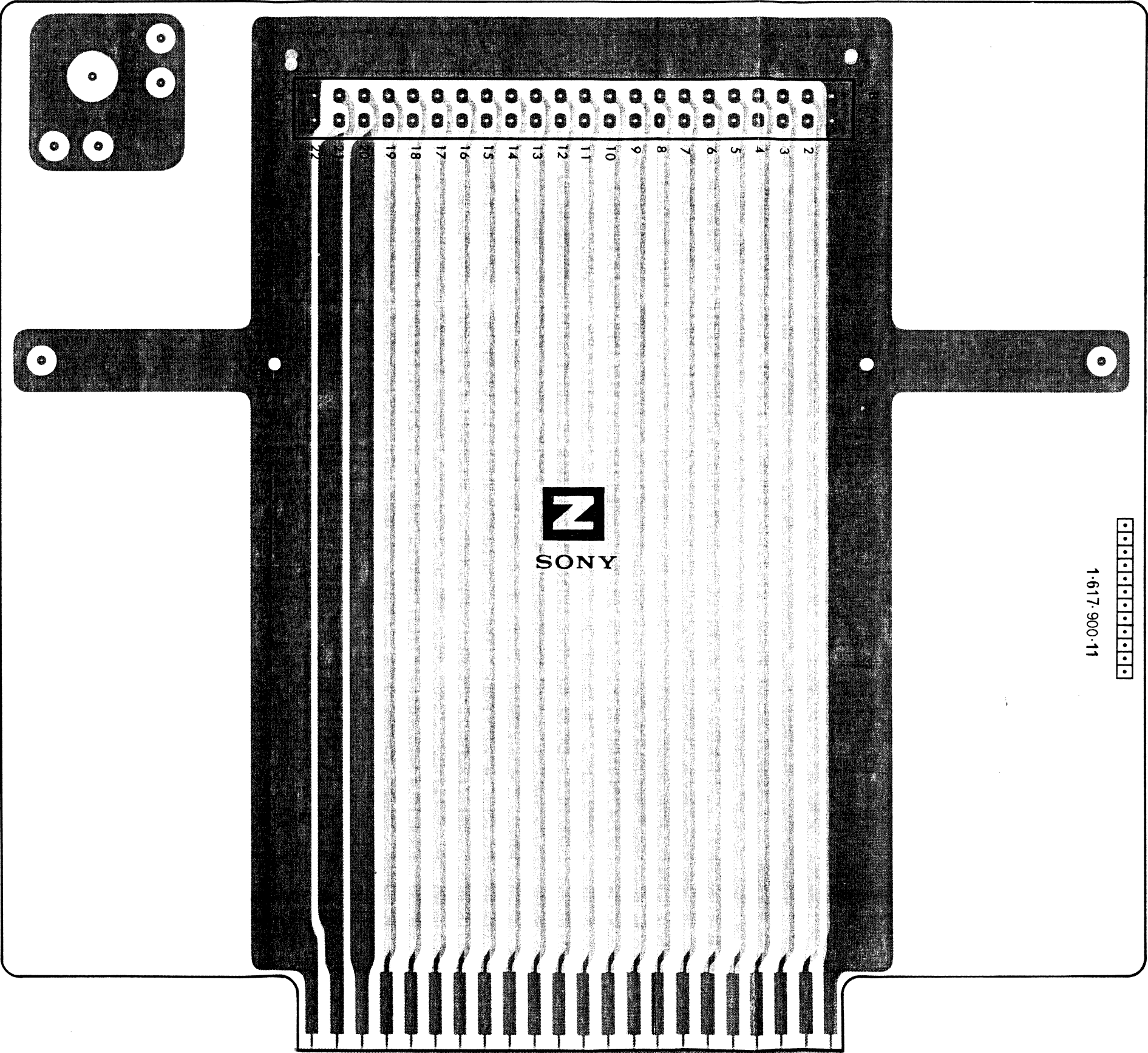
TB board (MOTHER BOARD)



TB board (MOTHER BOARD)

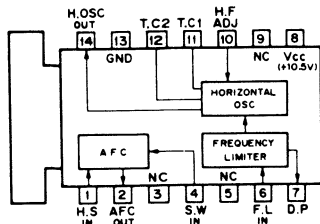


Z board (EXTENSION BOARD)



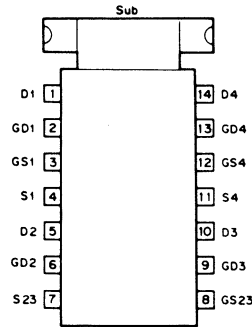
5-4. SEMICONDUCTORS

CX-158 (SONY)
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER
— TOP VIEW —

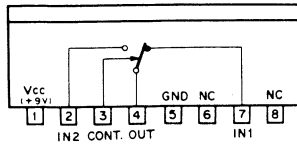


D.P. : DISCHARGE PROTECTION
F.L. IN : FREQUENCY LIMITER IN
H.F. ADJ. : HORIZONTAL FREQUENCY ADJ
H.OSC OUT : HORIZONTAL OSCILLATOR OUT
H.S. IN : HORIZONTAL SYNC IN
S.W. IN : SAW WAVE IN
T.C 1/2 : TIME CONSTANT 1/2

CX-718D (SONY)
SRG FET IC
— TOP VIEW —



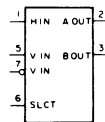
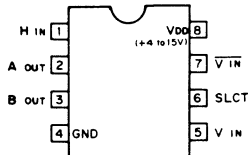
CX20061 (SONY)
ANALOG SWITCH
— SIDE VIEW —



CONT.	SW
0	
1	

0, LOW LEVEL
1, HIGH LEVEL

CX23025 (SONY)
C-MOS TV-VTR SYNC SIGNAL DISCRIMINATOR
— TOP VIEW —



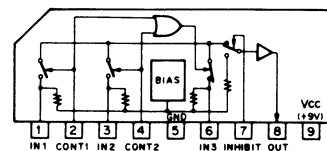
A OUT : SYNC SIGNAL DISCRIMINATION OUTPUT
B OUT : SYNC SIGNAL DISCRIMINATION OUTPUT
H IN : HORIZONTAL SYNC INPUT
SLCT : POWER ON INITIALIZED SELECT INPUT
V IN : VERTICAL SYNC INPUT
V IN : VERTICAL SYNC INPUT

POWER ON INITIALIZED		
SLCT INPUT	A OUTPUT	B OUTPUT
1	0	1
0	1	0

DISCRIMINATION		
V SYNC INPUT	A OUTPUT	B OUTPUT
FREQUENCY	A	B
50Hz	0	1
60Hz	1	0

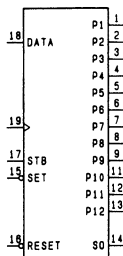
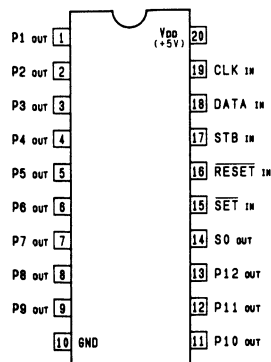
0, LOW LEVEL
1, HIGH LEVEL

CX894 (SONY)
3 INPUT SWITCH
— SIDE VIEW —

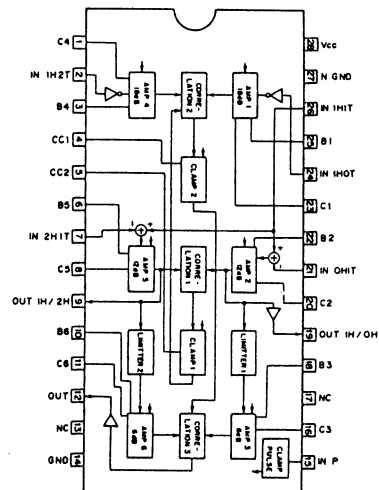


CXA1539P

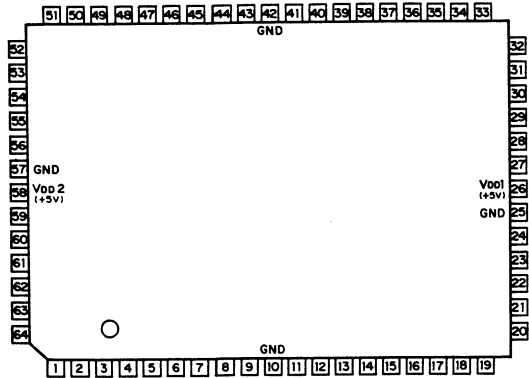
CX7991 (SONY)
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER
— TOP VIEW —



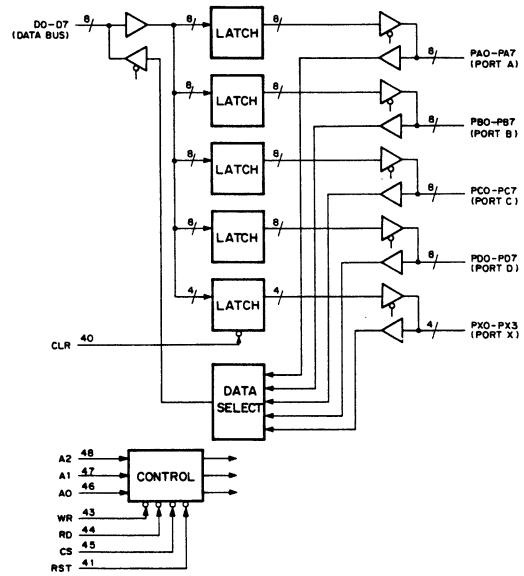
CLK : CLOCK
DATA : SERIAL DATA INPUT
P1-P12 : PARALLEL DATA
RESET : RESET SIGNAL
SET : SET SIGNAL
S0 : SERIAL DATA OUTPUT
STB : STROBE SIGNAL



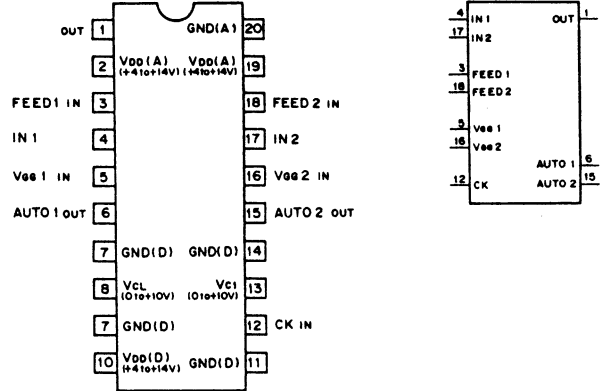
CXD1095Q (SONY) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —



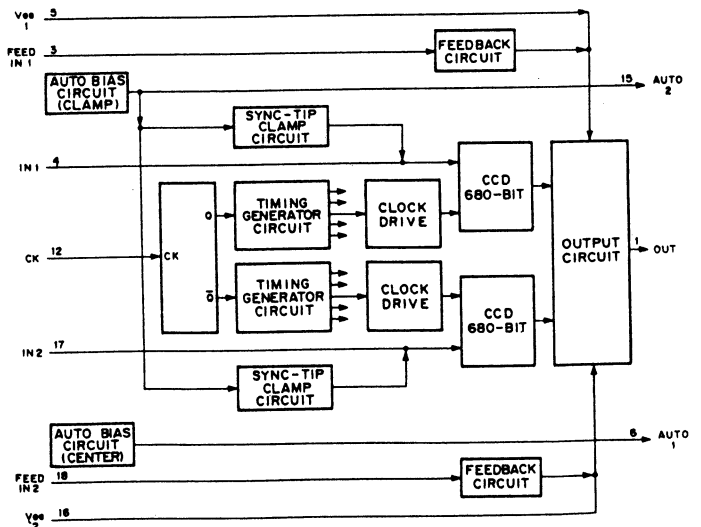
PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	O	O	PC6	33			NC	49	O	O	PX0
2			NC	18	O	O	PC7	34			NC	50	O	O	PX1
3	O	O	PB1	19			NC	35	O	O	D3	51			NC
4	O	O	PB2	20	O	O	PD0	36	O	O	D4	52	O	O	PX2
5	O	O	PB3	21	O	O	PD1	37	O	O	D5	53	O	O	PX3
6	O	O	PB4	22	O	O	PD2	38	O	O	D6	54	O	O	PA0
7	O	O	PB5	23	O	O	PD3	39	O	O	D7	55	O	O	PA1
8	O	O	PB6	24	O	O	PD4	40	O		CLR	56	O		PA2
9	O	O	PB7	25			GND	41	O		RST	57			GND
10			GND	26	O		VDD (+5V)	42			GND	58	O		VDD (+5V)
11	O	O	PC0	27	O	O	PD5	43	O		WR	59	O	O	PA3
12	O	O	PC1	28	O	O	PD6	44	O		RD	60	O	O	PA4
13	O	O	PC2	29	O	O	PD7	45	O		CS	61	O	O	PA5
14	O	O	PC3	30	O	O	D0	46	O		A0	62	O	O	PA6
15	O	O	PC4	31	O	O	D1	47	O		A1	63	O	O	PA7
16	O	O	PC5	32	O	O	D2	48	O		A2	64	O	O	PB0



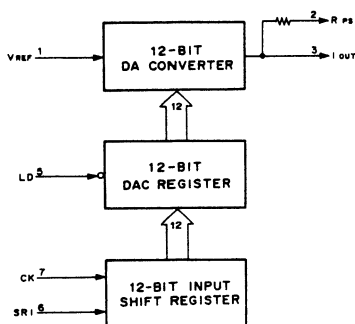
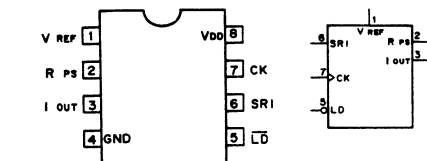
CXL1009P (SONY)
C-MOS CCD SIGNAL PROCESSOR FOR TBC
— TOP VIEW —



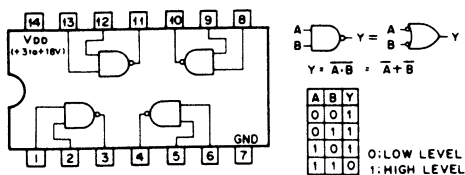
OUT ; OUT PUT
FEED 1/2 IN ; FEEDBACK INPUT 1/2
IN 1/2 ; INPUT 1/2
Vee 1/2 IN ; GATE INPUT 1/2
AUTO 1/2 OUT ; AUTO BIAS OUTPUT 1/2
CK IN ; CLOCK INPUT
VCL ; POWER SUPPLY 2 (DIGITAL)
VDD (A)/(D) ; POWER SUPPLY 1 (ANALOG)/(DIGITAL)
GND(A)/(D) ; GROUND (ANALOG)/(DIGITAL)



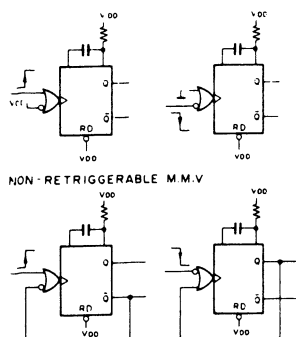
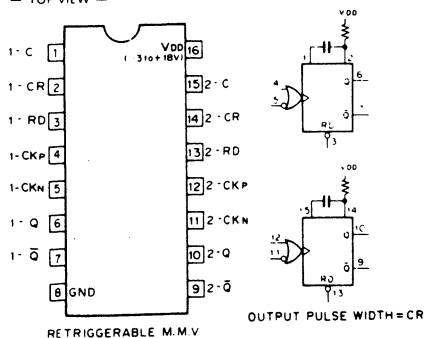
DAC8043GP (PMI)
C-MOS 12-BIT SERIAL INPUT D/A CONVERTER
— TOP VIEW —



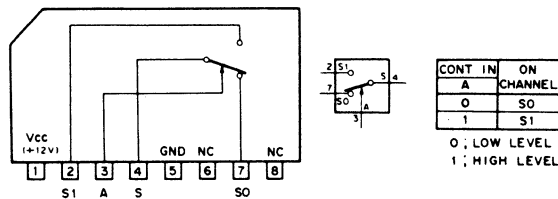
HD14011BP (HITACHI)
MC14011BCP (MOTOROLA)
TC4011BP (TOSHIBA)
uPD4011BC (NEC)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



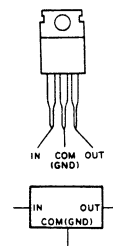
HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE/NON RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
— TOP VIEW —



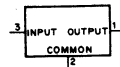
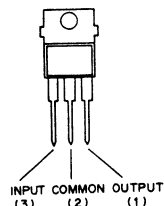
LA7016 (SANYO)
ELECTRONIC SWITCH
— SIDE VIEW —



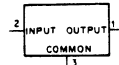
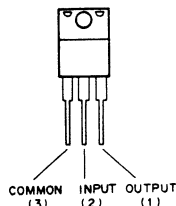
LM2940CT-5.0
NJM7805FA
NJM7809FA
NJM7812FA
POSITIVE VOLTAGE REGULATOR (1A)
— SIDE VIEW —



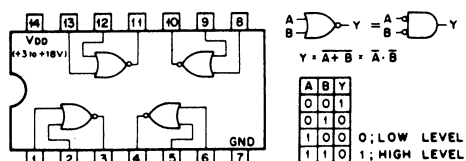
LM7812CT
XRA17809T
POSITIVE VOLTAGE REGULATOR (500mA)
— FRONT VIEW —



LM7912CT (NS) — 12V
NEGATIVE VOLTAGE REGULATOR
— FRONT VIEW —



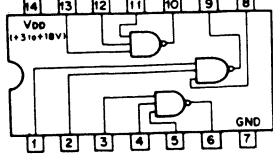
MC14001BCP (MOTOROLA)
uPD4001BC (NEC)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



MC14023BCP (MOTOROLA)
TC4023BP (TOSHIBA)

C-MOS 3-INPUT NAND GATE

— TOP VIEW —



$$Y = A \cdot B \cdot C = \overline{A + B + C}$$

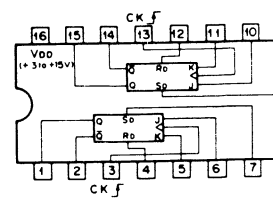
A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

MB84027B (FUJITSU)
TC504027BP (TOSHIBA)

C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET

— TOP VIEW —



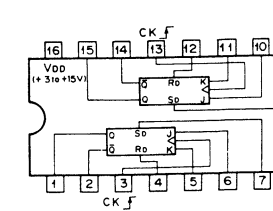
DIRECT R-S FLIP FLOP				J-K FLIP FLOP			
S	R	Q	Qn	J	K	Q	Qn
0	0	Qn	Q	0	0	Qn	Q
0	1	0	1	0	1	0	1
1	0	1	0	1	0	1	0
1	1	1	1	1	1	Qn	Q

0: LOW LEVEL
1: HIGH LEVEL
CK: f
1n: BEFORE CLOCK
1n+1: AFTER CLOCK

MC14027BCP (MOTOROLA)

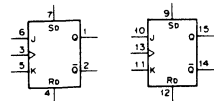
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET

— TOP VIEW —



DIRECT R-S FLIP FLOP				J-K FLIP FLOP			
S	R	Q	Qn	J	K	Q	Qn
0	0	Qn	Q	0	0	Qn	Q
0	1	0	1	0	1	0	1
1	0	1	0	1	0	1	0
1	1	1	1	1	1	Qn	Q

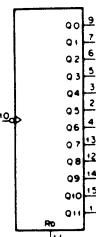
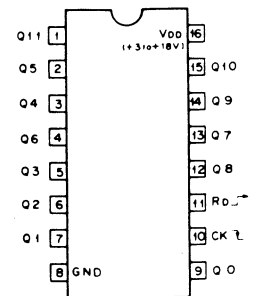
0: LOW LEVEL
1: HIGH LEVEL
CK: f
1n: BEFORE CLOCK
1n+1: AFTER CLOCK



MC14040BCP (MOTOROLA)
TC4040BP (TOSHIBA)

C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER

— TOP VIEW —



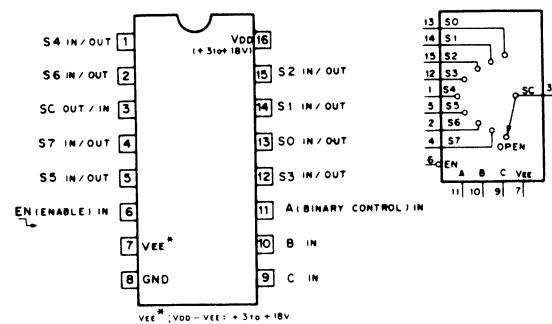
COUNT	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	1	1
...	...	...	...	...	...	...	...	...	...	...	...	...
4095	1	1	1	1	1	1	1	1	1	1	1	1

0: LOW LEVEL
1: HIGH LEVEL

MC14051BF

C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER

— TOP VIEW —



EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

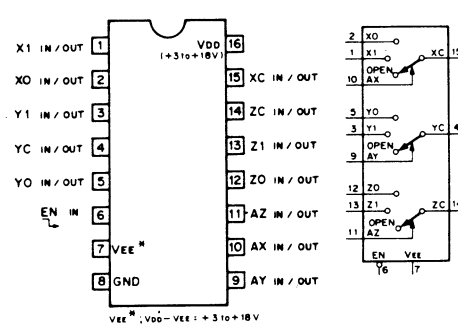
MC14053BCP (MOTOROLA)

TC4053BP (TOSHIBA)

TC4053BPHB (TOSHIBA)

C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER

— TOP VIEW —



CONT. INPUTS			ON CHANNEL
EN	A (X,Y,Z)		
0	0	0	0
0	1	1	1
1	X		OPEN

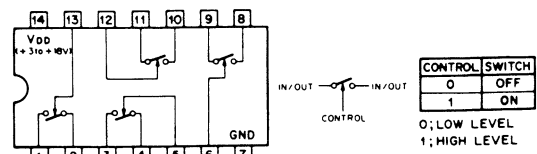
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE.

MC14086BCP

uPD4086BC

C-MOS BILATERAL ANALOG SWITCH

— TOP VIEW —



CONTROL	SWITCH
0	OFF
1	ON

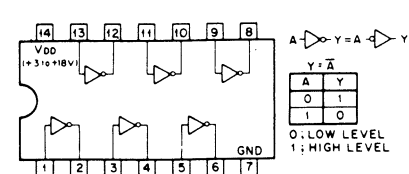
0: LOW LEVEL
1: HIGH LEVEL

MC14089UBCP

uPD4089UBC (NEC)

C-MOS INVERTER

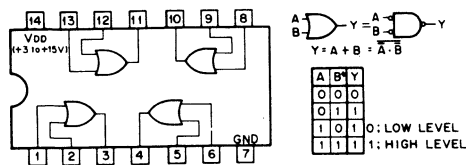
— TOP VIEW —



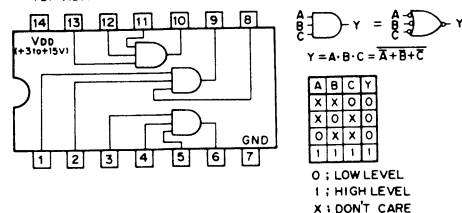
A	Y
0	1
1	0

0: LOW LEVEL
1: HIGH LEVEL

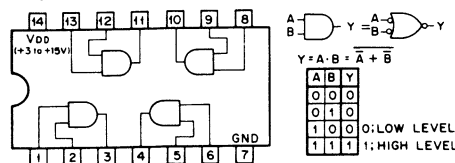
MC14071BCP (MOTOROLA)
TC4071BP (TOSHIBA)
uPD4071BC (NEC)
C-MOS 2-INPUT OR GATE
— TOP VIEW —



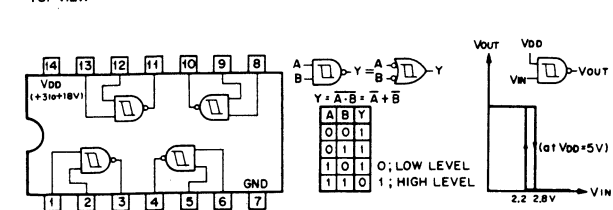
MC14073BCP (MOTOROLA)
TC4073BP (TOSHIBA)
uPD4073BC (NEC)
C-MOS 3-INPUT POSITIVE AND GATE
— TOP VIEW —



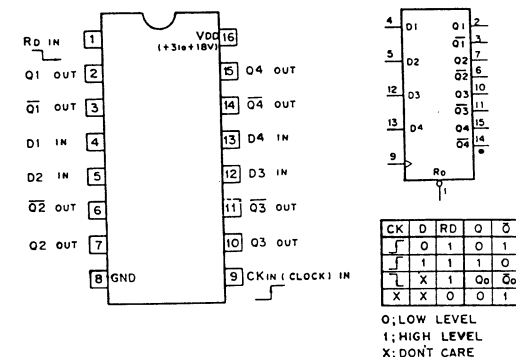
MC14081BCP (MOTOROLA)
TC4081BP (TOSHIBA)
uPD4081BC (NEC)
C-MOS 2-INPUT AND GATE
— TOP VIEW —



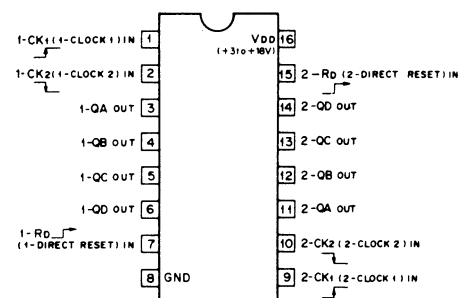
MC14093BCP
TC4093BP (TOSHIBA)
C-MOS 2-INPUT NAND SCHMITT TRIGGER
— TOP VIEW —



MC14175BCP (MOTOROLA)
TC40175BP (TOSHIBA)
C-MOS DECADE COUNTER/DIVIDER
— TOP VIEW —

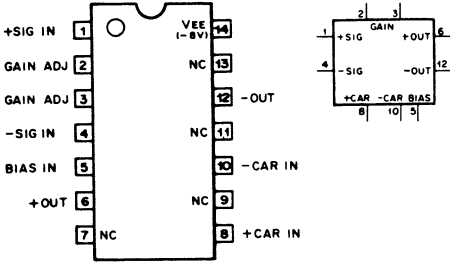


MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
— TOP VIEW —

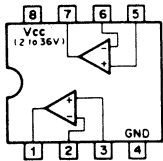


STATE	OUTPUTS
0	QA QB QC QD
1	QA QB QC QD
2	QA QB QC QD
3	QA QB QC QD
4	QA QB QC QD
5	QA QB QC QD
6	QA QB QC QD
7	QA QB QC QD
8	QA QB QC QD
9	QA QB QC QD
10	QA QB QC QD
11	QA QB QC QD
12	QA QB QC QD
13	QA QB QC QD
14	QA QB QC QD
15	QA QB QC QD

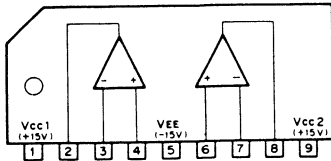
MC1496P (MOTOROLA)
BALANCED MODULATOR/DEMODULATOR
— TOP VIEW —



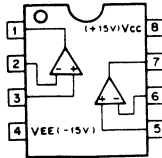
NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —



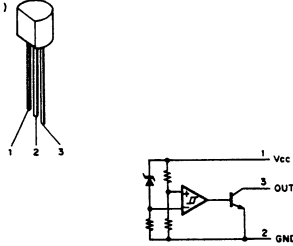
NJM4558
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



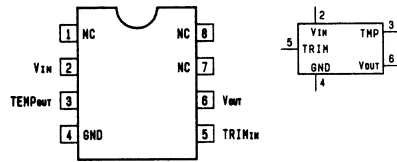
NJM4558D (JRC)
uPC4558C (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —



PST529C (MITSUMI) $V_s = 4.5V$
VOLTAGE DETECTOR, SYSTEM RESET
(MITSUMI)

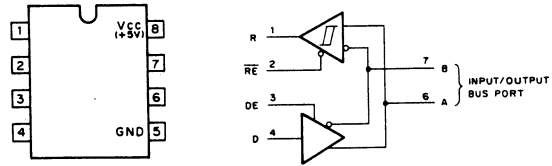


REF-02EZ (PMI)
REFERENCE/TEMPERATURE TRANSDUCER
— TOP VIEW —



V_{IN} : INPUT VOLTAGE (+7V to +40V)
TEMP_{out} : TEMPERATURE TRANSDUCER
VOLTAGE OUTPUT (2.1mV/°C)
TRIM_{in} : OUTPUT SIGNAL TRIMMING
V_{out} : OUTPUT VOLTAGE (+5V)

SN75176BP (TI)
TTL-DIFFERENTIAL BUS TRANSCEIVER
— TOP VIEW —



FUNCTION TABLE
— DRIVER —

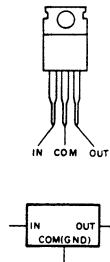
INPUT	ENABLE	OUTPUT
D	DE	A B
1	1	1 0
0	1	0 1
X	0	Hi-Z Hi-Z

1 : HIGH LEVEL
0 : LOW LEVEL
X : DONT CARE
Hi-Z : HIGH IMPEDANCE
? : INDETERMINATE

— RECEIVER —

DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	RE	R
$V_{ID} > 0.2V$	0	1
$-0.2V < V_{ID} < 0.2V$	0	?
$V_{ID} < -0.2V$	0	0
X	1	Hi-Z

TA7812S
POSITIVE VOLTAGE REGULATOR (0.5A)
— SIDE VIEW —



Pin	Signal	Pin	Signal
1	G-Y OUT	24	R-Y OUT
2	B-Y IN	23	B-Y OUT
3	R-Y IN	22	Vcc (+12V)
4	ALT PULSE IN	21	BYPASS
5	OSC BIAS OUT	20	COLOR CONT
6	OSC IN	19	CHROMA OUT
7	OSC IN	18	UNICOLOR CONT
8	OSC OUT	17	BURST OUT
9	APC FILTER	16	ACC FILTER
10	APC FILTER	15	ACC AMP IN
11	BURST IN	14	BYPASS
12	GND	13	BURST GATE IN

The block diagram illustrates the internal architecture of a color television receiver. It shows the following components and their interconnections:

- Inputs:** B-Y (line 23), B-Y (line 2), G-Y (line 1), and R-Y (line 24).
- Demodulation and Matrixing:** B-Y and G-Y signals pass through demodulators and a matrix block. The B-Y signal also passes through a B-Y demodulator.
- Color Control and Chroma Processing:** The color control block (lines 18, 20) and chroma block (line 19) process the color signals. The chroma block feeds into the color detector (ACC DET, line 16).
- Amplification and Burst Processing:** The color detector feeds into the color amplifier (ACC AMP, line 17). The burst signal (line 13) passes through a burst gate and an amplifier (ACC AMP, line 15).
- Band-Pass Amplification:** The burst signal also passes through a band-pass amplifier (BAND PASS AMP, line 13).
- Control and Detection Stages:**
 - The PAL switch (PAL SW, line 3) and phase control block (line 8) manage the signal flow.
 - The killer amplifier (KILLER AMP, line 4) and ident amplifier (IDENT AMP, line 5) process the signal.
 - The ident killer detector (IDENT KILLER DET, line 9) and APC detector (APC DET, line 11) provide feedback.
 - The APC filter (line 10) and burst filter (line 11) filter the signals.
- Other Components:** The CW OSC (line 3) and OSC BIAS (line 5) provide timing and bias signals. The ALT PULSE (line 7) and OSC (line 8) provide additional timing signals.

Figure 1 shows a logic diagram of a 1-bit full adder implemented using a 74181 ALU. The ALU is configured with inputs A=14, B=13, and carry-in C=12. The ALU output Y is connected to the sum output S (pin 1). The carry-out C (pin 7) is connected to the carry-in C (pin 12). The ALU is powered by VDD (pin 14) and GND (pin 7). The ALU is a 74181, which is a 4-bit ALU with 14 pins. The inputs are A (pin 14), B (pin 13), and C (pin 12). The outputs are Y (pin 1), S (pin 7), and C (pin 12). The ALU is powered by VDD (pin 14) and GND (pin 7). The ALU is a 74181, which is a 4-bit ALU with 14 pins. The inputs are A (pin 14), B (pin 13), and C (pin 12). The outputs are Y (pin 1), S (pin 7), and C (pin 12). The ALU is powered by VDD (pin 14) and GND (pin 7).

1 - C 1 16 VDD (+3 to +18V)

1 - CR 2 15 2 - C

1 - RD 3 14 2 - CR

1 - CK 4 13 2 - RD

1 - CK 5 12 2 - CK

1 - Q 6 11 2 - CK

1 - Q 7 10 2 - Q

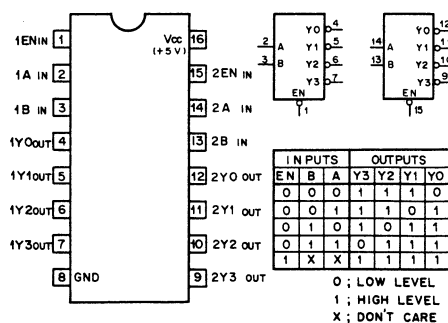
8 GND 9 2 - Q

OUTPUT PULSE WIDTH = C-R

Pin diagram of the 74VHC163 4-bit binary counter. The chip has 20 pins. Pin 1 is SO IN, Pin 2 is OE1 IN, Pin 3 is OE2 IN, Pin 4 is G/QG I/O, Pin 5 is E/QE I/O, Pin 6 is C/QC I/O, Pin 7 is A/QA I/O, Pin 8 is QA OUT, Pin 9 is RD IN, Pin 10 is GND, Pin 11 is SR IN, Pin 12 is CK IN, Pin 13 is B/QB I/O, Pin 14 is S1 IN, Pin 15 is SL IN, Pin 16 is QH OUT, Pin 17 is H/QH I/O, Pin 18 is F/QF I/O, Pin 19 is S1 IN, Pin 20 is Vcc (+5V). The pin diagram shows a notch at the top. To the right, a logic symbol for a 4-bit counter is shown with inputs SO, S1, SL, SR, OE1, OE2 and outputs A/QA, B/QB, C/QC, D/QD, E/QE, F/QF, G/QG, H/QH, QA, QD, QH. A 9V battery symbol is connected to the bottom of the logic symbol.

[illegible]

TC74HCT139AF
TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —



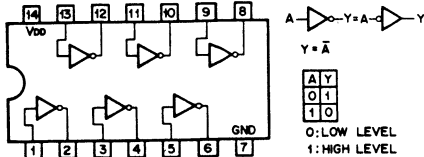
Y = A + B = $\overline{A \cdot B}$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TYPE	V _{DD}
TC74AC02F	+2 to +5.5V
74ACT02SJ TC74ACT02F	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

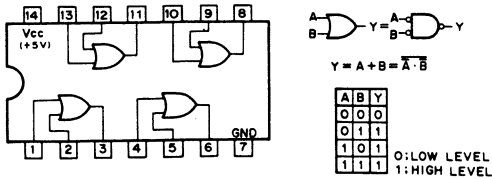
TC74HCT04AF (TOSHIBA) FLAT PACKAGE



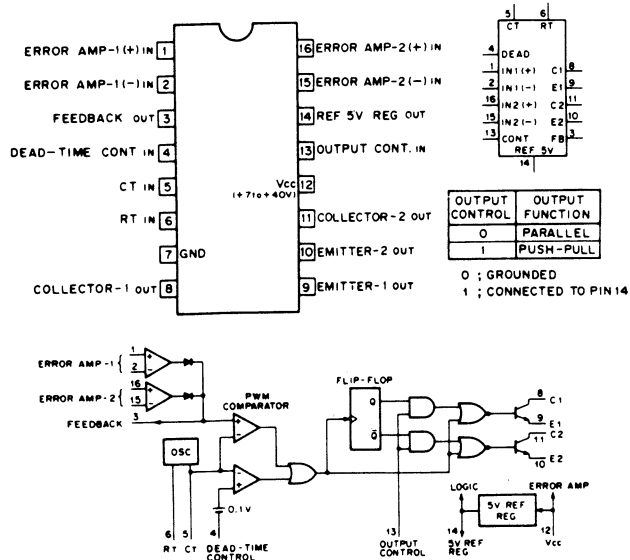
NOTE:

TYPE	V _{DD}
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

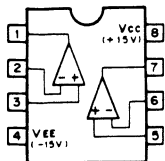
TC74HCT32FA
TTL 2-INPUT POSITIVE-OR GATE
— TOP VIEW —



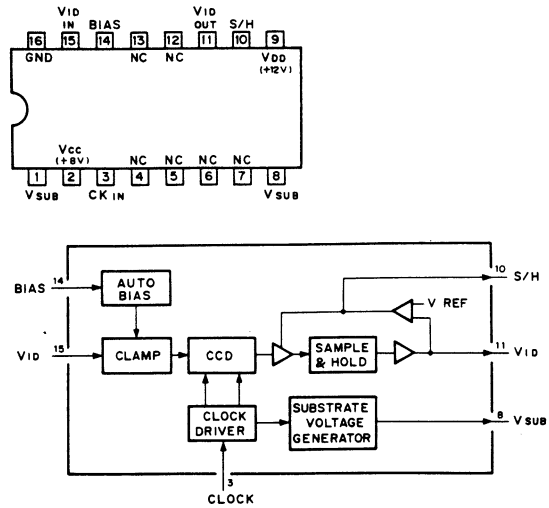
TL494CN (TI)
PWM POWER CONTROL
— TOP VIEW —



TL082ACP
TL082M
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



TL8608AP (TOSHIBA)
N-CH CCD ANALOG PROCESSING UNIT
— TOP VIEW —

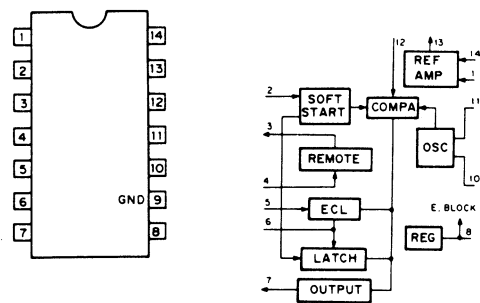


TOP VIEW

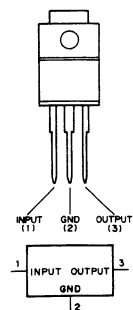
TX-429M



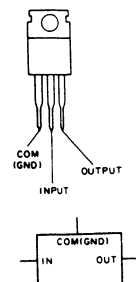
μPC1394C (NEC)
CONTROLLER OF SWITCHING MODE POWER SUPPLY
— TOP VIEW —



UPC2412HF
POSITIVE VOLTAGE REGULATOR
— FRONT VIEW —

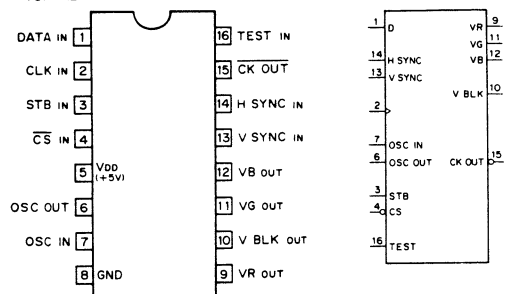


uPC7912H (NEC)
NEGATIVE VOLTAGE REGULATOR (1A)
— SIDE VIEW —

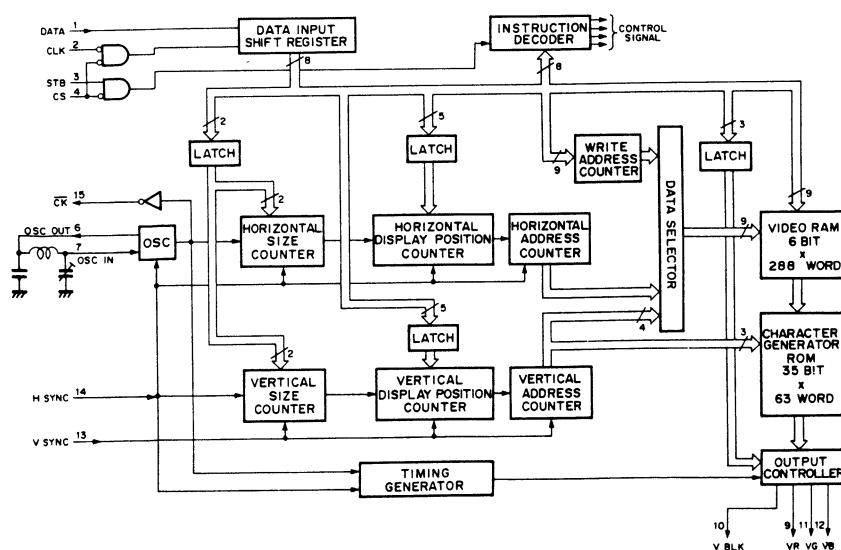


OUTPUT VOLTAGE	AN79??	FS79??	uA79??UC	uPC79??H	MC79??CT
-2V	AN7905	FS7905	uA7905UC	uPC7905H	MC7905CT
-5.2V	AN7906	FS7906	uA7906UC	uPC7906H	MC7906CT
-6V	AN7907	FS7907	uA7907UC	uPC7907H	MC7907CT
-7V	AN7908	FS7908	uA7908UC	uPC7908H	MC7908CT
-8V	AN7909	FS7909	uA7909UC	uPC7909H	MC7909CT
-9V	AN7910	FS7910	uA7910UC	uPC7910H	MC7910CT
-10V	AN7911	FS7911	uA7911UC	uPC7911H	MC7911CT
-12V	AN7912	FS7912	uA7912UC	uPC7912H	MC7912CT
-15V	AN7915	FS7915	uA7915UC	uPC7915H	MC7915CT
-18V	AN7918	FS7918	uA7918UC	uPC7918H	MC7918CT
-20V	AN7920	FS7920	uA7920UC	uPC7920H	MC7920CT
-24V	AN7924	FS7924	uA7924UC	uPC7924H	MC7924CT

UPD6142G-101 (NEC) FLAT PACKAGE
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY
— TOP VIEW —



D: DATA INPUT
CK OUT: EQUAL TO OUTPUT OF OSC OUT
CLK: CLOCK INPUT
CS: CHIP SELECT INPUT
H SYNC: H SYNC INPUT
OSC IN, OUT: EXTERNAL TERMINAL FOR OSC
STB: STROBE INPUT
TEST: TEST CLOCK INPUT
VB: BLUE CHARACTER DATA OUTPUT
V BLK: V BLANKING OUTPUT
VG: GREEN CHARACTER DATA OUTPUT
VR: RED CHARACTER DATA OUTPUT
V SYNC: V SYNC INPUT



2SA812
2SA1162
2SA1226
2SC1623
2SC2757
2SC3624A
DTA144EK
DTC144EK



2SA844
2SA1091
2SC2551
2SC2878
2SC3068



2SA979
2SA1306



2SA1048
2SA1115
2SC2688
2SC403SP
DTA124ES
DTA144ES
DTC124ES
DTC143TS
DTC144ES
XDA124ES
XDA144ES
XDC124ES
XDC144ES



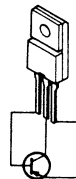
2SA1156
2SA1406
2SC3600



2SA1175
2SC2785



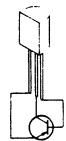
2SA1488



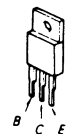
2SB734
2SD774



2SB740



2SB858
2SB861
2SC3675
2SD1134



2SC2555



2SC2688
2SC2752
2SC3209
2SC3298
2SD669A



2SD1556



2SC3851



2SD789



2SK381
2SK514



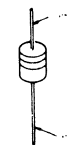
2SK523



1S2835
1S2836
1S2837
MA152WK



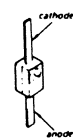
1SS119
1S83
WG713A



1SS148
10E2
GP08D
RD10EB
RD12EB
RD15EB
RD15ES
RD3.0EB
RD3.9EB
RD3.9ES
RD4.3EB
RD5.6EB
RD5.6ES
RD6.2EB
RD6.8EB
RD6.8ES
RD7.5ES
RD8.2ES
RD9.1EB
RD9.1ES
RU-3AM



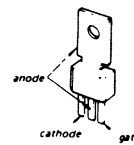
1T25



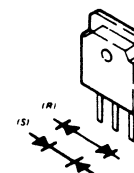
CR02AM-4
CR02AM-8



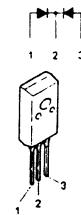
CR3CM-8



CTU-38R
CTU-38S



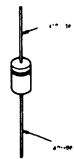
D10SC6M



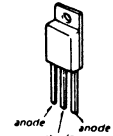
D10SC6MR



ERB44-06
ERB81-004
ERC04-24S
ERD28-04S
ERD28-08S
HZ12A
HZ12B
RH-1
RH-1A
RU-1A
RU-1C
SIB01-02



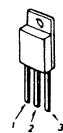
ESAC25-04C



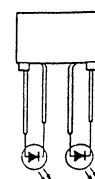
ESAC25-04D
ESAC25-04N



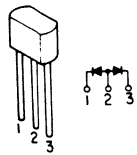
ESAC31-02D



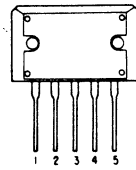
LT-9220H



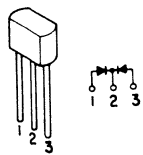
MC911



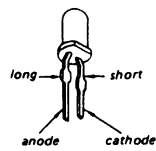
STR8124



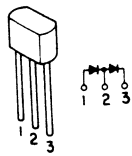
MC921



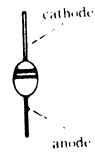
**GL3HY3
TLG124A
TLR124
TLY124**



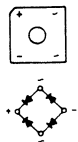
MC932



V11N



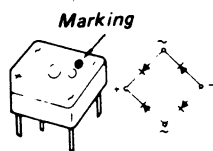
RB406N



**RD5.6M
RD7.5M**



S3WB60Z



SECTION 6 EXPLODED VIEWS

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

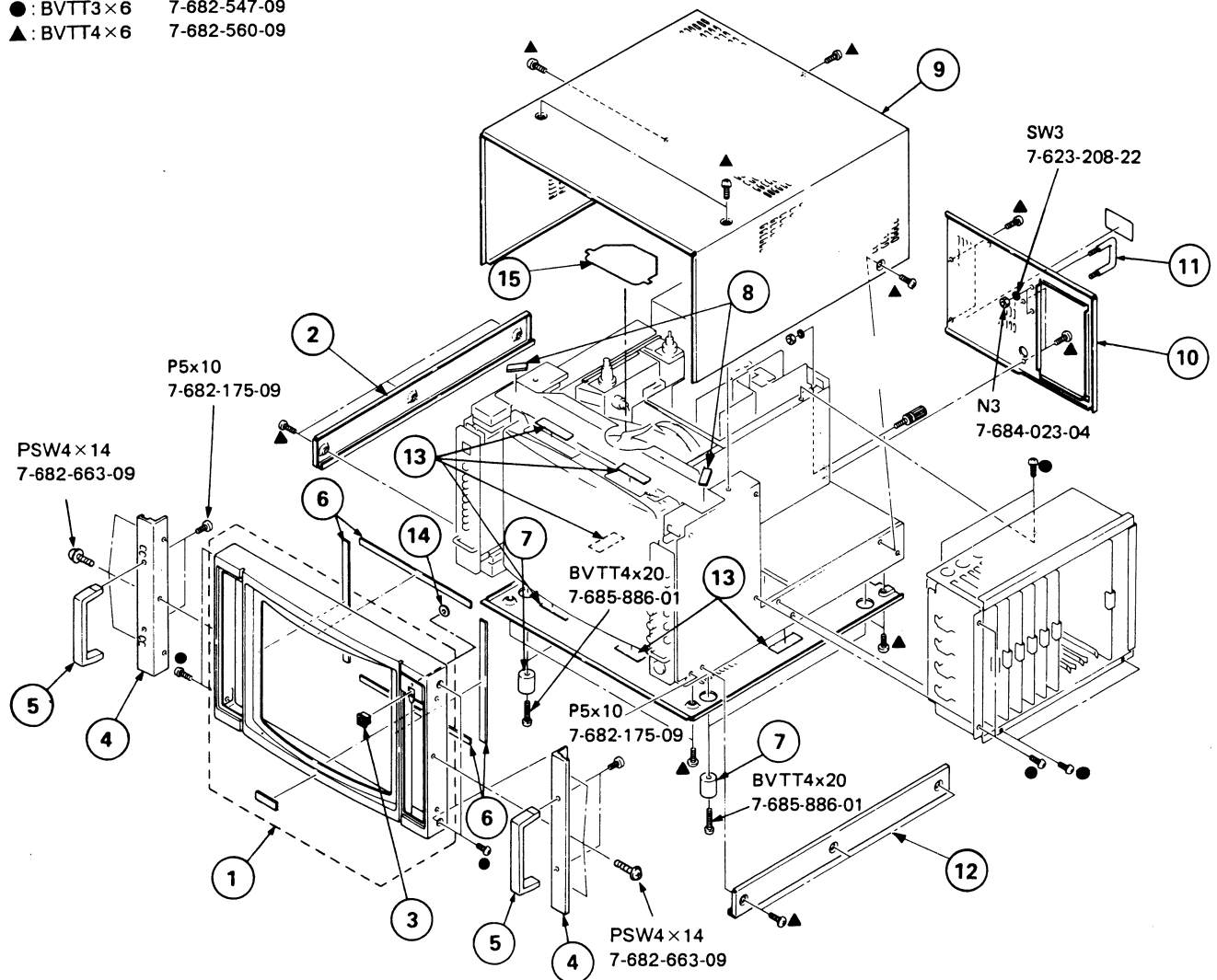
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. BEZEL

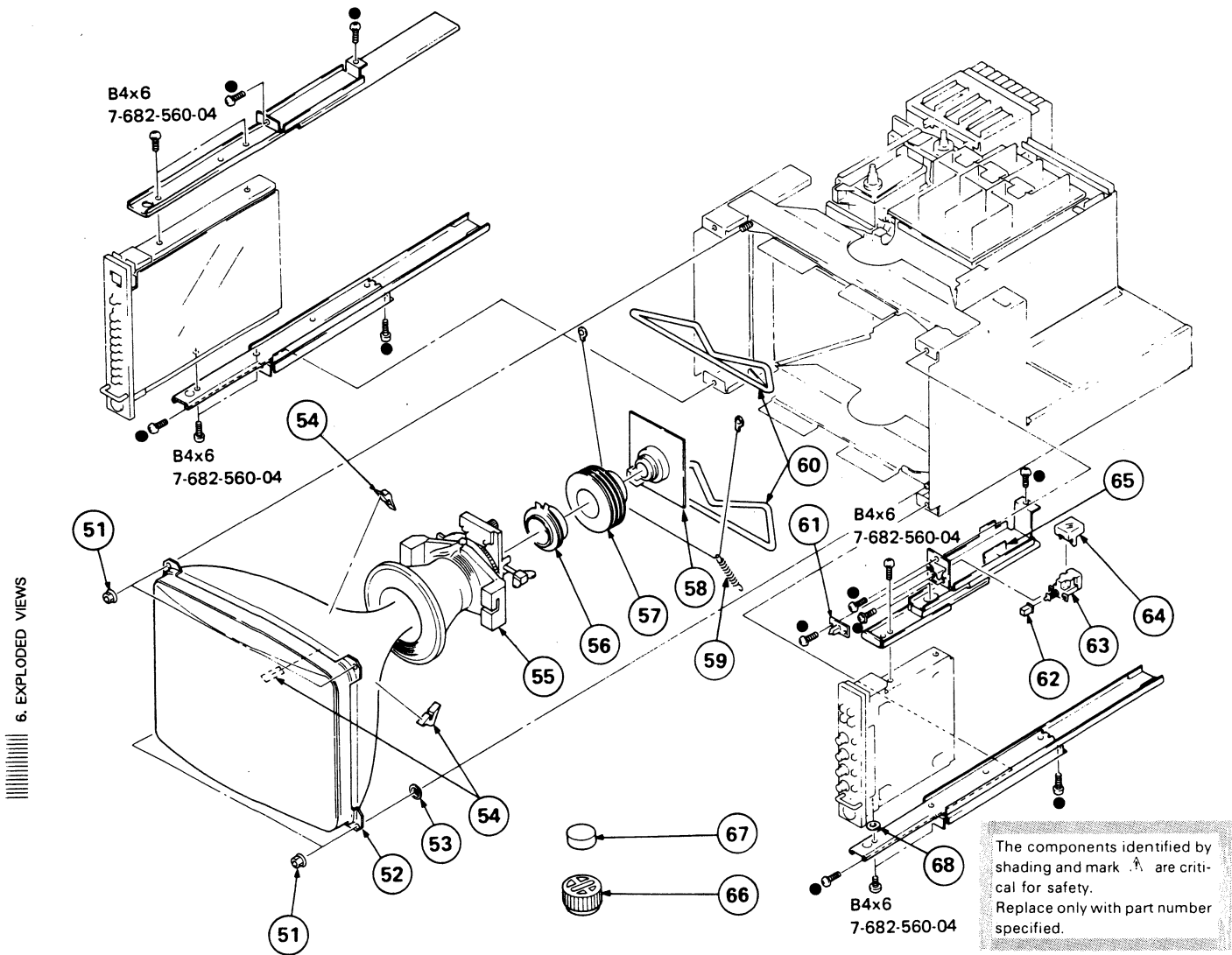
- : BVTT3×6 7-682-547-09
▲: BVTT4×6 7-682-560-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4379-403-7	BEZEL ASSY	3,6	9	*4-379-461-01	CABINET	
2	*4-379-452-01	PANEL (LEFT), SIDE		10	*4-379-450-01	COVER, BACK	
3	*4-379-423-11	ESCUTCHEON (A)		11	*4-379-476-01	PROTECTOR, CONNECTOR	
4	*4-391-207-01	BASE, HANDLE		12	*4-379-444-01	PANEL (RIGHT), SIDE	
5	*4-337-212-11	HANDLE		13	4-864-324-11	SPACER	
6	4-308-878-XX	CUSHION, (A) PICTURE TUBE		14	4-309-378-00	SPACER	
7	3-642-656-01	FOOT		15	*4-039-979-01	COVER, ANODE	
8	9-911-840-XX	DAMPER, CASE (LOWER)					

6-2. PICTURE TUBE

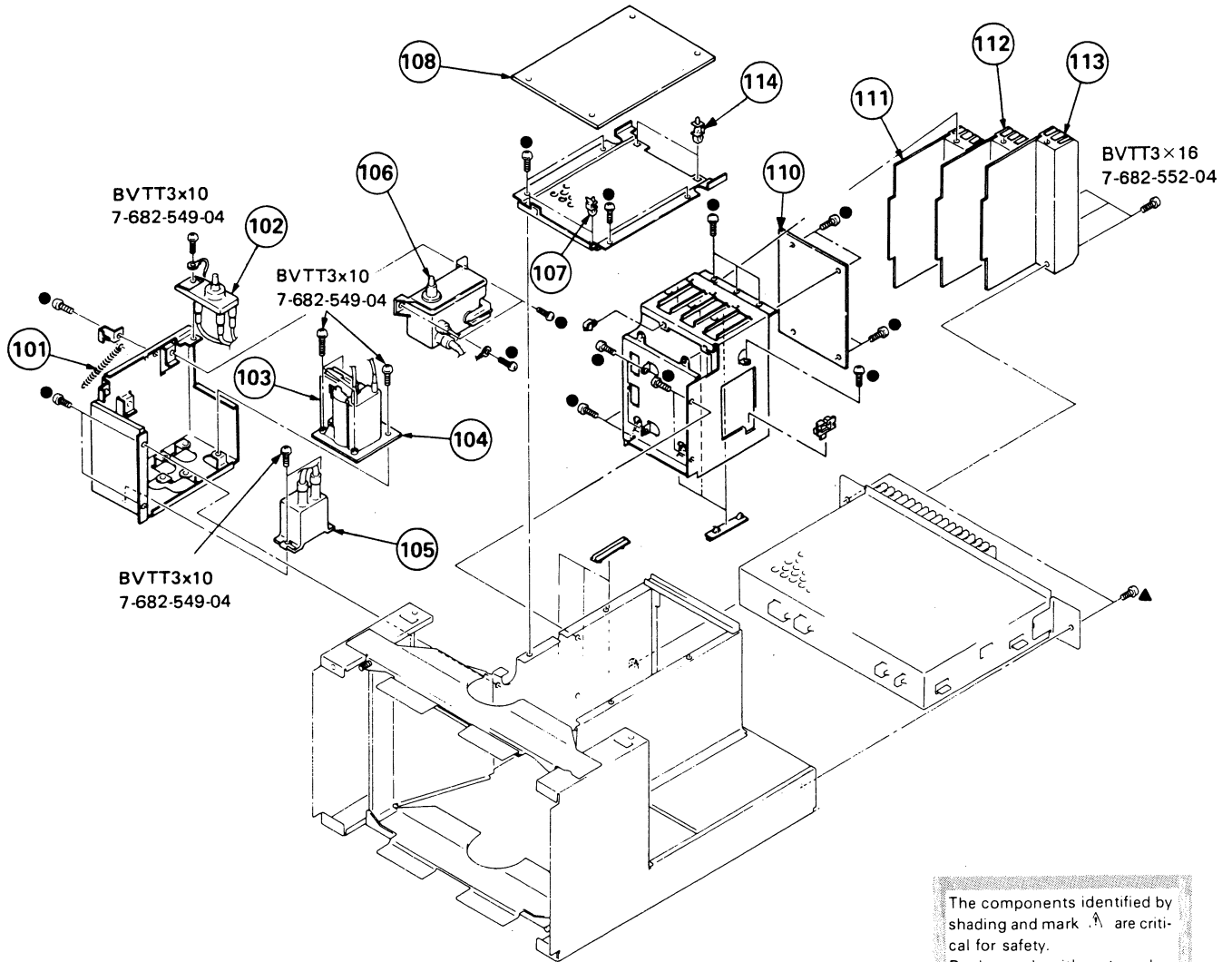
●: BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-306-034-00	FLANGE NUT, (B) 5MM		60	Δ 1-426-263-11	COIL, DEMAGNETOZATION	
52	8-738-051-05	CRT (M34JNR20X)	(BVM-1311 ONLY)	61	*1-617-893-11	Y BOARD	
	8-738-052-05	CRT (M34JNR21X)	(BVM-1411P ONLY)	62	4-374-839-21	BUTTON (A)	
53	4-348-567-00	WASHER, CRT POSITION		63	Δ 1-571-877-12	SWITCH, PUSH (AC POWER) (1 KEY)	
54	3-703-961-01	SPACER, DY		64	*4-393-095-01	COVER, POWER SWITCH	
55	Δ 1-451-287-21	DEFLECTION YOKE (Y14FAA)		65	*9-911-844-XX	CUSHION, CONTROL BUTTON	
56	Δ 1-452-261-22	CRT NECK ASSY (362)		66	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM φ	
57	Δ 1-452-117-31	CRT NECK ASSY		67	1-452-032-00	MAGNET, DISK; 10MM φ	
58	*1-617-889-13	C BOARD		68	4-866-147-11	SPACER	
59	4-303-774-XX	SPRING					

6-3. CHASSIS

- : BVTT3×6 7-682-547-09
▲ : BVTT4×6 7-682-560-09



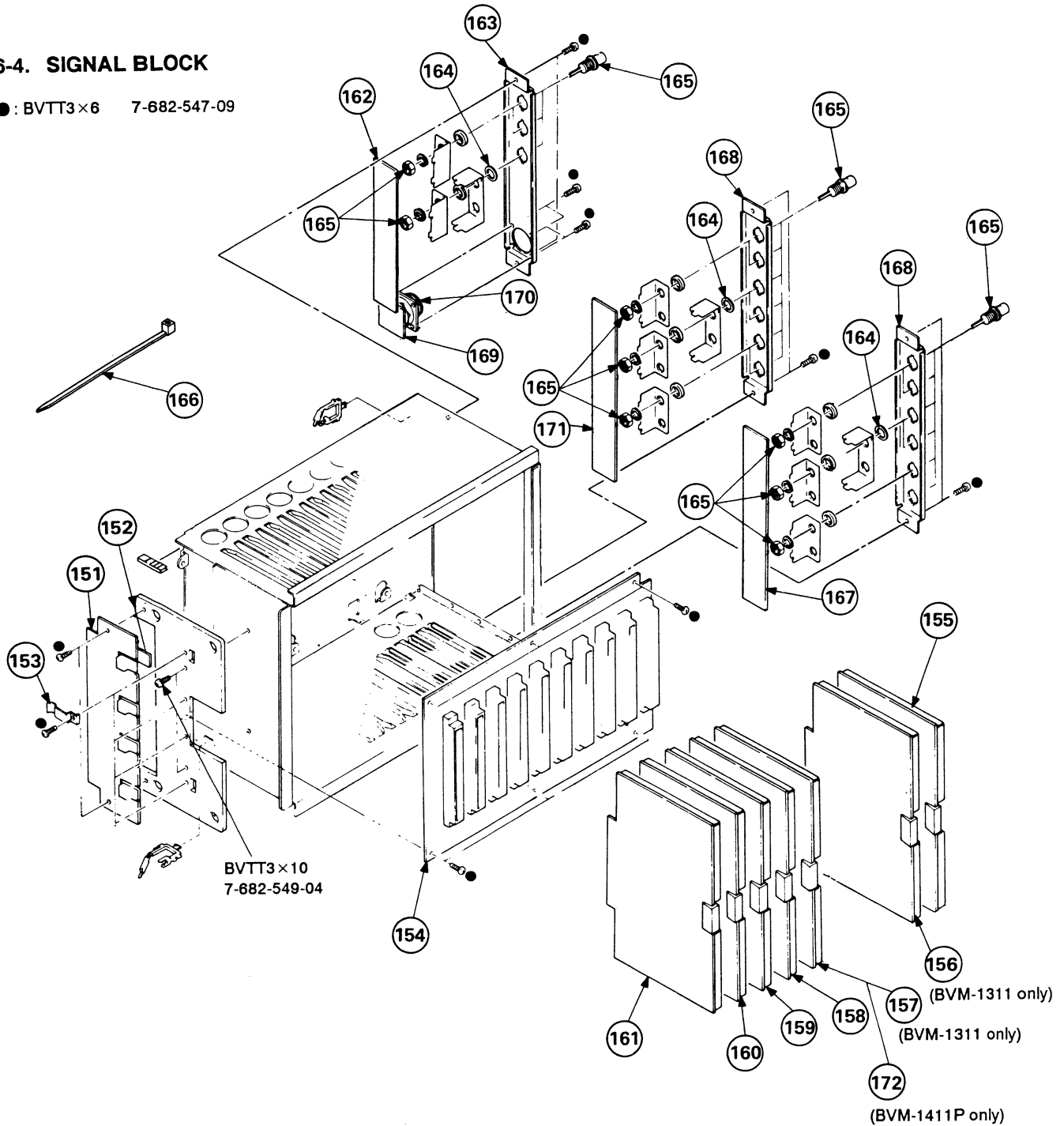
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
101	4-335-996-00	SPRING		108	*A-1135-362-A	BK BOARD, COMPLETE	
102	▲ 1-237-165-13	RESISTOR ASSY, HIGH-VOLTAGE		110	*1-647-911-11	TA BOARD	
103	▲ 1-439-382-21	TRANSFORMER ASSY, FLYBACK		111	*A-1346-028-A	EA BOARD, COMPLETE	
104	*1-617-891-21	PB BOARD		112	*A-1345-597-A	EB BOARD, COMPLETE	
105	▲ 1-162-142-21	CAP BLOCK, HIGH VOLTAGE		113	*A-1345-598-A	PA BOARD, COMPLETE	
106	▲ 1-453-103-41	HIGH-VOLTAGE BLOCK (HB-203(C))		114	*4-353-620-02	HINGE, PC BOARD	
107	*3-703-141-00	HOLDER, PCB					

6-4. SIGNAL BLOCK

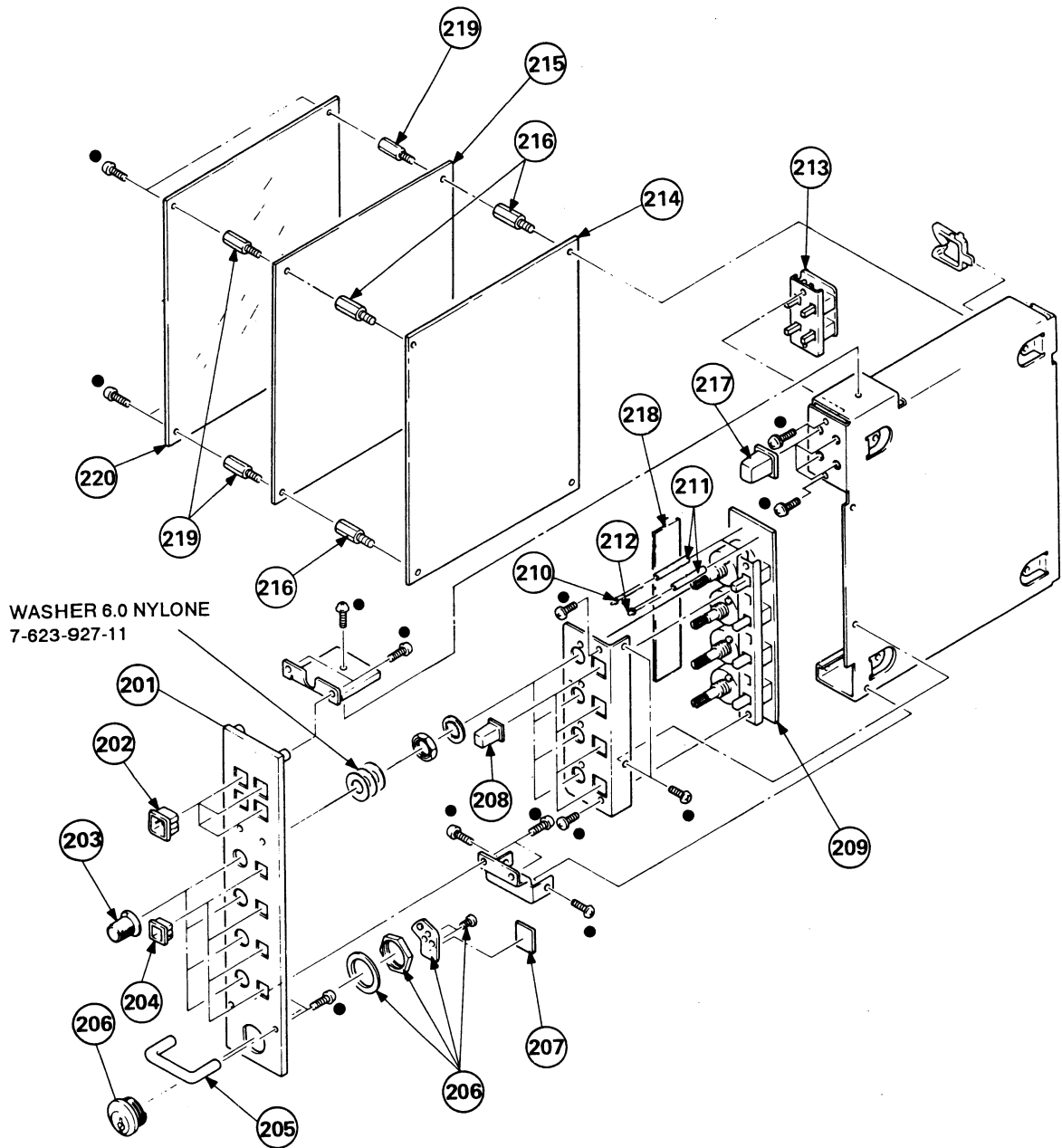
●: BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
151	*1-617-885-11	GC BOARD		161	*A-1135-361-A	BJ BOARD, COMPLETE	
152	4-370-970-01	SPACER, TR		162	*1-627-678-11	W BOARD	
153	*4-363-404-00	HOLDER, IC		163	*4-391-220-01	PANEL (C), CONNECTOR	
154	*A-1390-344-A	TB BOARD, COMPLETE		164	*4-379-404-01	INSULATOR, BNC	
155	*A-1135-355-A	BA BOARD, COMPLETE		165	1-565-791-11	CONNECTOR, BNC 1P	
156	*A-1135-606-B	BT BOARD, COMPLETE	(BVM-1311 ONLY)	166	*3-337-402-01	BAND, BINDING	
157	*A-1135-357-A	BC BOARD, COMPLETE	(BVM-1311 ONLY)	167	*1-617-895-11	QA BOARD	
158	*A-1135-537-A	BG BOARD, COMPLETE		168	*4-379-439-01	PANEL (A), CONNECTOR	
159	*A-1135-359-A	BH BOARD, COMPLETE		169	*1-627-677-11	V BOARD	
160	*A-1135-360-A	BI BOARD, COMPLETE		170	1-563-265-11	CONNECTOR, MULTIPLE 10P	
				171	*1-618-786-11	QB BOARD	
				172	*A-1135-391-A	BD BOARD, COMPLETE (BVM-1411P ONLY)	

6-5. DRAWER BLOCK (RIGHT)

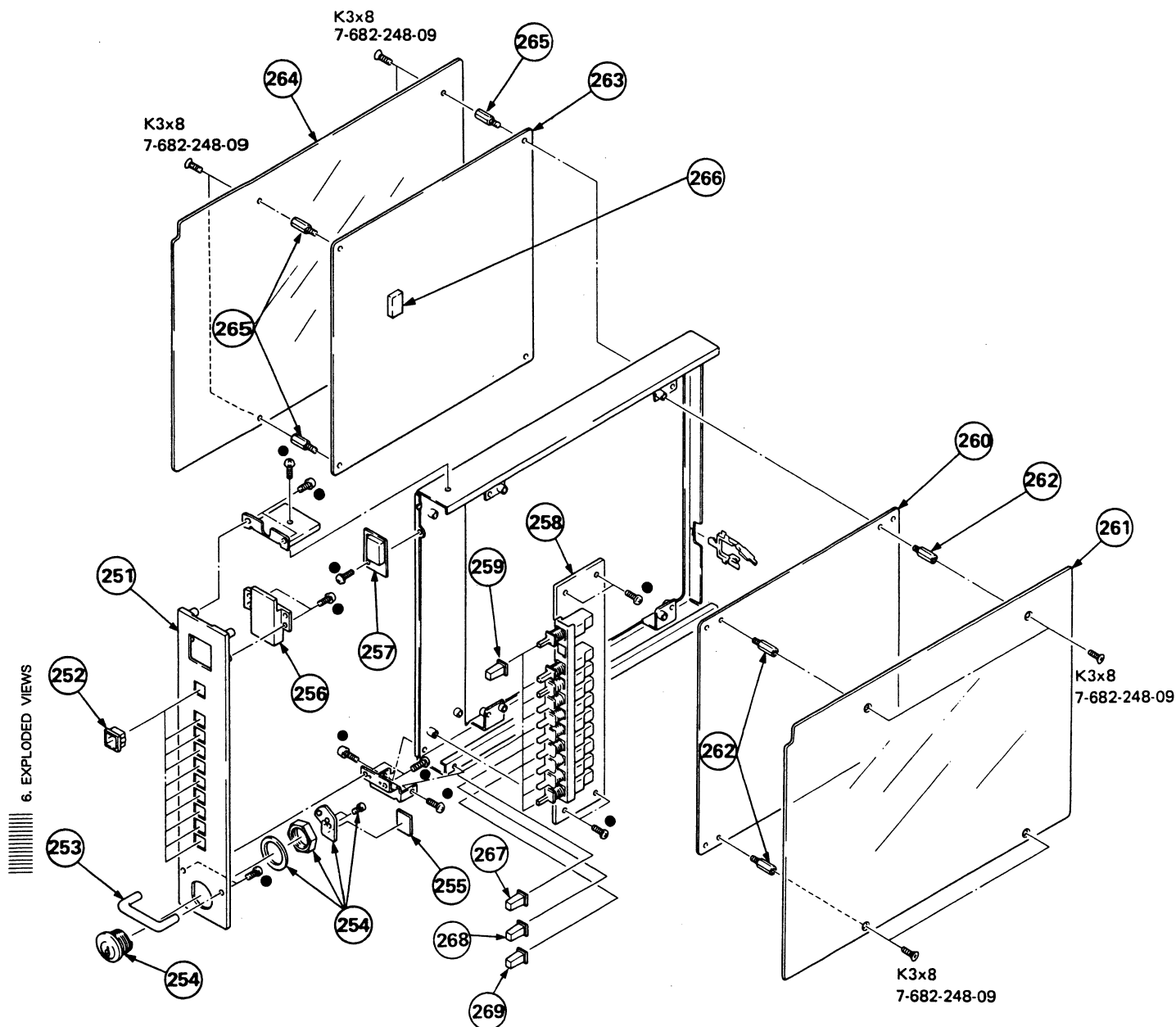
●: BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
201	4-379-453-21	PANEL (R), CONTROL		211	*4-026-910-00	HOLDER, LED	
202	4-379-423-11	ESCUTCHEON (A)		212	8-719-938-68	DIODE TLY124	
203	X-3673-635-0	KNOB (1) ASSY, CONTROL		213	*1-647-258-11	HX BOARD	
204	4-379-424-11	ESCUTCHEON (B)		214	A-1375-121-A	HZ BOARD, COMPLETE	
205	4-379-421-01	HANDLE, DRAWER		215	A-1375-114-A	HY BOARD, COMPLETE	
206	4-378-917-01	LOCK, CYLINDER		216	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
207	4-337-209-11	PROTECTOR, SCRATCH		217	4-039-982-01	BUTTON (U)	
208	4-379-422-11	BUTTON (B)		218	*1-627-682-11	HH BOARD	
209	*1-647-257-11	HW BOARD		219	*4-040-721-01	BOSS	
210	8-719-812-41	DIODE TLR124		220	*4-039-977-01	COVER, PC BOARD	

6-6. DRAWER BLOCK (LEFT)

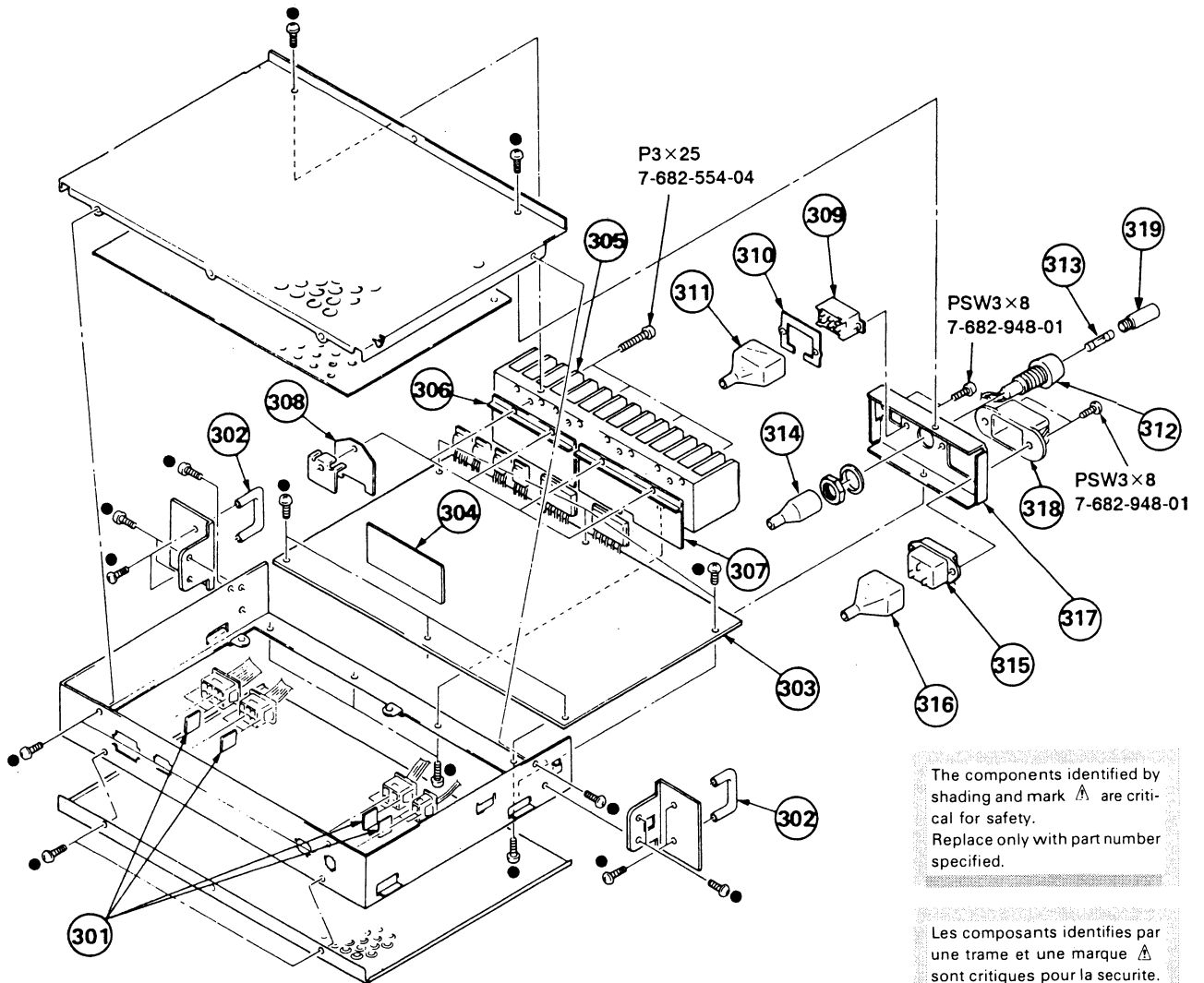
●: BVTT3×6 7-682-547-09



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
251	4-379-454-11	PANEL (L), CONTROL		261	*4-033-128-11	COVER, DA PC BOARD	
252	4-379-423-11	ESCUTCHEON (A)		262	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
253	4-379-421-01	HANDLE, DRAWER		263	*A-1345-979-A	DB BOARD, COMPLETE	
254	4-378-917-01	LOCK, CYLINDER		264	*4-033-129-01	COVER, DB PC BOARD	
255	4-337-209-11	PROTECTOR, SCRATCH		265	*4-886-542-00	SUPPORT	
256	4-379-418-01	COVER, LAMP		266	9-911-841-XX	CUSHION	
257	*1-617-892-11	X BOARD		267	4-374-839-31	BUTTON (A) R	
258	*1-617-890-11	HA BOARD		268	4-374-839-41	BUTTON (A) G	
259	4-374-839-21	BUTTON (A)		269	4-374-839-51	BUTTON (A) B	
260	*A-1345-978-A	DA BOARD, COMPLETE					

6-7. POWER BLOCK

●: BVTT3×6 7-682-547-09



The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
301	3-675-469-00	SPACER, SOLENOID		310	*4-379-409-01	NUT, PLATE	
302	4-379-421-01	HANDLE, DRAWER		311	*4-371-879-02	COVER, AC SELECT	
303	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1311 ONLY)	304	312	1-533-167-21	HOLDER, FUSE	
303	*A-1316-090-A	GA BOARD, COMPLETE (BVM-1411P ONLY)		313	Δ 1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	(BVM-1311 ONLY)
304	*1-627-679-11	GB BOARD			Δ 1-532-203-11	FUSE, TIME-LAG (2A/250V) (BVM-1411P ONLY)	
305	*4-347-706-00	HEAT SINK (TR)		314	*4-393-031-01	COVER, FUSE HOLDER	
306	4-379-410-01	SPACER (G2), POLISHING		315	Δ 1-580-375-11	INLET 3P	
307	4-379-403-01	SPACER (G1), POLISHING		316	*4-601-466-11	COVER, 3P INLET	
308	*4-379-408-01	INSULATOR (G3)		317	*4-379-430-01	PANEL, POWER	
309	Δ 1-570-173-22	SWITCH, VOLTAGE CHANGE		318	2-990-241-02	HOLDER (A), PLUG	
				319	1-533-168-21	HOLDER, FUSE	

SECTION 7 ELECTRICAL PARTS LIST

BA

NOTE:

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

• All resistors are in ohms
• F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

• MF : μ F, PF : μ F

COILS

• MMH : mH, UH : μ H

• The components identified by $\boxtimes$ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
*A-1135-355-A	BA BOARD, COMPLETE	*****		C35	1-126-964-11	ELECT 10MF 20% 16V	
*4-353-708-00	HOOK, FINGER			C36	1-126-964-11	ELECT 10MF 20% 16V	
8-729-119-78	TRANSISTOR 2SC2785-HFE			C37	1-126-964-11	ELECT 10MF 20% 16V	
				C38	1-126-964-11	ELECT 10MF 20% 16V	
				C39	1-101-004-00	CERAMIC 0.01MF 50V	
<CONNECTOR>				C51	1-126-103-11	ELECT 470MF 20% 16V	
BA1	*1-566-054-11	PIN, CONNECTOR 2P		C52	1-126-101-11	ELECT 100MF 20% 16V	
BA2	*1-566-054-11	PIN, CONNECTOR 2P		C53	1-126-101-11	ELECT 100MF 20% 16V	
BA3	*1-566-054-11	PIN, CONNECTOR 2P		C54	1-126-101-11	ELECT 100MF 20% 16V	
BA4	*1-566-054-11	PIN, CONNECTOR 2P		C55	1-126-101-11	ELECT 100MF 20% 16V	
BA5	*1-566-054-11	PIN, CONNECTOR 2P					
BA6	*1-566-054-11	PIN, CONNECTOR 2P		C56	1-126-101-11	ELECT 100MF 20% 16V	
				C57	1-126-101-11	ELECT 100MF 20% 16V	
				C71	1-101-004-00	CERAMIC 0.01MF 50V	
				C72	1-101-004-00	CERAMIC 0.01MF 50V	
				C73	1-101-004-00	CERAMIC 0.01MF 50V	
<COMPOSITION CIRCUIT BLOCK>				C74	1-101-004-00	CERAMIC 0.01MF 50V	
C1	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C75	1-101-004-00	CERAMIC 0.01MF 50V	
C2	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C76	1-101-004-00	CERAMIC 0.01MF 50V	
C3	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C77	1-101-004-00	CERAMIC 0.01MF 50V	
C4	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C101	1-102-038-00	CERAMIC 0.001MF 500V	
C5	1-233-030-11	COMPOSITION CIRCUIT BLOCK					
C6	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C102	1-126-964-11	ELECT 10MF 20% 16V	
C7	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C103	1-102-951-00	CERAMIC 15PF 5% 50V	
				C104	1-124-902-00	ELECT 0.47MF 20% 50V	
				C201	1-102-038-00	CERAMIC 0.001MF 500V	
				C202	1-126-964-11	ELECT 10MF 20% 16V	
<CAPACITOR>				C203	1-102-951-00	CERAMIC 15PF 5% 50V	
C1	1-124-910-11	ELECT 47MF 20% 16V		C204	1-124-902-00	ELECT 0.47MF 20% 50V	
C2	1-124-910-11	ELECT 47MF 20% 16V		C301	1-102-038-00	CERAMIC 0.001MF 500V	
C3	1-124-910-11	ELECT 47MF 20% 16V		C302	1-126-964-11	ELECT 10MF 20% 16V	
C4	1-126-964-11	ELECT 10MF 20% 16V		C303	1-102-965-00	CERAMIC 39PF 5% 50V	
C5	1-124-910-11	ELECT 47MF 20% 16V					
C6	1-124-910-11	ELECT 47MF 20% 16V		C304	1-124-902-00	ELECT 0.47MF 20% 50V	
C7	1-124-910-11	ELECT 47MF 20% 16V		C305	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
C8	1-124-910-11	ELECT 47MF 20% 16V		C306	1-102-942-00	CERAMIC 5PF 1PF 50V	
C9	1-101-004-00	CERAMIC 0.01MF 50V		C401	1-102-038-00	CERAMIC 0.001MF 500V	
C10	1-101-004-00	CERAMIC 0.01MF 50V		C402	1-126-964-11	ELECT 10MF 20% 16V	
C11	1-126-103-11	ELECT 470MF 20% 16V					
C12	1-126-101-11	ELECT 100MF 20% 16V		C403	1-102-951-00	CERAMIC 15PF 5% 50V	
C13	1-126-101-11	ELECT 100MF 20% 16V		C404	1-124-902-00	ELECT 0.47MF 20% 50V	
C14	1-126-101-11	ELECT 100MF 20% 16V		C501	1-102-038-00	CERAMIC 0.001MF 500V	
C15	1-126-101-11	ELECT 100MF 20% 16V		C502	1-126-964-11	ELECT 10MF 20% 16V	
C16	1-126-101-11	ELECT 100MF 20% 16V		C503	1-102-951-00	CERAMIC 15PF 5% 50V	
C17	1-126-101-11	ELECT 100MF 20% 16V					
C18	1-126-964-11	ELECT 10MF 20% 16V		C504	1-124-902-00	ELECT 0.47MF 20% 50V	
C19	1-126-964-11	ELECT 10MF 20% 16V		C601	1-102-038-00	CERAMIC 0.001MF 500V	
C20	1-101-004-00	CERAMIC 0.01MF 50V		C602	1-126-964-11	ELECT 10MF 20% 16V	
C21	1-101-006-00	CERAMIC 0.047MF 50V		C603	1-102-951-00	CERAMIC 15PF 5% 50V	
C31	1-101-004-00	CERAMIC 0.01MF 50V		C604	1-124-902-00	ELECT 0.47MF 20% 50V	
C32	1-126-964-11	ELECT 10MF 20% 16V					
C33	1-126-964-11	ELECT 10MF 20% 16V		C701	1-102-976-00	CERAMIC 180PF 5% 50V	
C34	1-126-964-11	ELECT 10MF 20% 16V		C702	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
				C703	1-126-964-11	ELECT 10MF 20% 16V	
				C704	1-124-910-11	ELECT 47MF 20% 16V	
				C705	1-136-153-00	FILM 0.01MF 50V	

BA

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C706	1-124-903-11	ELECT 1MF	20% 50V	Q205	8-729-266-82	TRANSISTOR 2SC2668-0	
C707	1-123-369-00	ELECT 4.7MF	20% 25V	Q301	8-729-266-82	TRANSISTOR 2SC2668-0	
C708	1-126-964-11	ELECT 10MF	20% 16V	Q302	8-729-266-82	TRANSISTOR 2SC2668-0	
C709	1-102-973-00	CERAMIC 100PF	5% 50V	Q303	8-729-266-82	TRANSISTOR 2SC2668-0	
C710	1-130-481-00	MYLAR 0.0068MF	5% 50V	Q304	8-729-384-48	TRANSISTOR 2SA844-E	
C711	1-136-155-00	FILM 0.015MF	5% 50V	Q305	8-729-266-82	TRANSISTOR 2SC2668-0	
C712	1-130-471-00	MYLAR 0.001MF	5% 50V	Q401	8-729-266-82	TRANSISTOR 2SC2668-0	
C713	1-124-903-11	ELECT 1MF	20% 50V	Q402	8-729-266-82	TRANSISTOR 2SC2668-0	
C714	1-102-973-00	CERAMIC 100PF	5% 50V	Q403	8-729-266-82	TRANSISTOR 2SC2668-0	
C715	1-101-361-00	CERAMIC 150PF	5% 50V	Q404	8-729-384-48	TRANSISTOR 2SA844-E	
C716	1-136-153-00	FILM 0.01MF	5% 50V	Q405	8-729-266-82	TRANSISTOR 2SC2668-0	
C717	1-102-973-00	CERAMIC 100PF	5% 50V	Q501	8-729-266-82	TRANSISTOR 2SC2668-0	
<TRIMMER>				Q502	8-729-266-82	TRANSISTOR 2SC2668-0	
CV101	1-141-179-12	CAP. VAR. TRIMMER		Q503	8-729-266-82	TRANSISTOR 2SC2668-0	
CV102	1-141-260-00	TRIMAR. CERAMIC		Q504	8-729-384-48	TRANSISTOR 2SA844-E	
CV201	1-141-179-12	CAP. VAR. TRIMMER		Q505	8-729-266-82	TRANSISTOR 2SC2668-0	
CV202	1-141-260-00	TRIMAR. CERAMIC		Q601	8-729-266-82	TRANSISTOR 2SC2668-0	
CV401	1-141-179-12	CAP. VAR. TRIMMER		Q602	8-729-266-82	TRANSISTOR 2SC2668-0	
CV402	1-141-260-00	TRIMAR. CERAMIC		Q603	8-729-266-82	TRANSISTOR 2SC2668-0	
CV501	1-141-179-12	CAP. VAR. TRIMMER		Q604	8-729-384-48	TRANSISTOR 2SA844-E	
CV502	1-141-260-00	TRIMAR. CERAMIC		Q605	8-729-266-82	TRANSISTOR 2SC2668-0	
CV601	1-141-179-12	CAP. VAR. TRIMMER		Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE	
CV602	1-141-260-00	TRIMAR. CERAMIC		Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<DIODE>				Q703	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D1	8-719-109-63	DIODE RD3.0ESB2		Q704	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D2	8-719-000-06	DIODE MC921		Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D4	8-719-000-04	DIODE MC911		Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D701	8-719-911-19	DIODE 1SS119		Q707	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D702	8-719-109-75	DIODE RD4.3ESB2		Q708	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D703	8-719-911-19	DIODE 1SS119		Q709	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D704	8-719-911-19	DIODE 1SS119		Q710	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D705	8-719-911-19	DIODE 1SS119		Q711	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D706	8-719-911-19	DIODE 1SS119		Q712	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D707	8-719-911-19	DIODE 1SS119		Q713	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D708	8-719-911-19	DIODE 1SS119		Q714	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D709	8-719-911-19	DIODE 1SS119		Q715	8-729-800-10	TRANSISTOR 2SC3068	
D710	8-719-911-19	DIODE 1SS119		Q716	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<IC>				Q717	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC1	8-759-208-94	IC CX-894		<RESISTOR>			
IC2	8-759-208-94	IC CX-894		R1	1-249-405-11	CARBON 100 5%	1/4W
IC3	8-759-140-53	IC UPD4053BC		R2	1-249-405-11	CARBON 100 5%	1/4W
<TRANSISTOR>				R3	1-249-405-11	CARBON 100 5%	1/4W
Q1	8-729-900-89	TRANSISTOR DTC144ES		R4	1-249-437-11	CARBON 47K 5%	1/4W
Q2	8-729-384-48	TRANSISTOR 2SA844-E		R5	1-249-405-11	CARBON 100 5%	1/4W
Q3	8-729-900-89	TRANSISTOR DTC144ES		R6	1-249-432-11	CARBON 18K 5%	1/4W
Q4	8-729-900-89	TRANSISTOR DTC144ES		R7	1-249-434-11	CARBON 27K 5%	1/4W
Q5	8-729-900-89	TRANSISTOR DTC144ES		R8	1-249-422-11	CARBON 2.7K 5%	1/4W
Q6	8-729-900-65	TRANSISTOR DTA144ES		R9	1-249-405-11	CARBON 100 5%	1/4W
Q101	8-729-266-82	TRANSISTOR 2SC2668-0		R10	1-249-405-11	CARBON 100 5%	1/4W
Q102	8-729-266-82	TRANSISTOR 2SC2668-0		R11	1-249-433-11	CARBON 22K 5%	1/4W
Q103	8-729-266-82	TRANSISTOR 2SC2668-0		R12	1-249-405-11	CARBON 100 5%	1/4W
Q104	8-729-384-48	TRANSISTOR 2SA844-E		R13	1-249-437-11	CARBON 47K 5%	1/4W
Q105	8-729-266-82	TRANSISTOR 2SC2668-0		R14	1-249-429-11	CARBON 10K 5%	1/4W
Q201	8-729-266-82	TRANSISTOR 2SC2668-0		R101	1-249-417-11	CARBON 1K 5%	1/4W
Q202	8-729-266-82	TRANSISTOR 2SC2668-0		R102	1-249-418-11	CARBON 1.2K 5%	1/4W
Q203	8-729-266-82	TRANSISTOR 2SC2668-0		R103	1-249-425-11	CARBON 4.7K 5%	1/4W
Q204	8-729-384-48	TRANSISTOR 2SA844-E		R104	1-249-405-11	CARBON 100 5%	1/4W
				R105	1-215-437-00	METAL 4.7K 1%	1/4W
				R106	1-249-430-11	CARBON 12K 5%	1/4W
				R107	1-249-433-11	CARBON 22K 5%	1/4W
				R108	1-215-427-00	METAL 1.8K 1%	1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1311 ONLY) *****		C131	1-124-034-51	ELECT 33MF	20% 16V
				C132	1-124-034-51	ELECT 33MF	20% 16V
				C133	1-124-034-51	ELECT 33MF	20% 16V
	*4-353-708-00	HOOK, FINGER		C136	1-101-004-00	CERAMIC 0.01MF	50V
		<CAPACITOR>		C137	1-101-004-00	CERAMIC 0.01MF	50V
C1	1-102-951-00	CERAMIC 15PF	5% 50V	C138	1-101-004-00	CERAMIC 0.01MF	50V
C2	1-102-951-00	CERAMIC 15PF	5% 50V	C139	1-101-004-00	CERAMIC 0.01MF	50V
C3	1-102-947-00	CERAMIC 10PF	0.5PF 50V	C143	1-101-004-00	CERAMIC 0.01MF	50V
C4	1-101-880-00	CERAMIC 47PF	5% 50V	C144	1-124-916-11	ELECT 22MF	20% 25V
C5	1-102-965-00	CERAMIC 39PF	5% 50V	C201	1-126-966-11	ELECT 33MF	20% 25V
				C202	1-101-004-00	CERAMIC 0.01MF	50V
C6	1-101-004-00	CERAMIC 0.01MF	50V			<TRIMMER>	
C7	1-102-935-00	CERAMIC 2PF	0.25PF 50V	CV1	1-141-171-00	CAP, TRIMMER 15P	
C8	1-101-361-00	CERAMIC 39PF	5% 50V	CV2	1-141-171-00	CAP, TRIMMER 15P	
C9	1-126-964-11	ELECT 10MF	20% 16V			<DIODE>	
C10	1-126-964-11	ELECT 10MF	20% 16V	D1	8-719-911-19	DIODE 1SS119	
C11	1-101-004-00	CERAMIC 0.01MF	50V	D2	8-719-920-95	DIODE 1T25-0	
C12	1-101-004-00	CERAMIC 0.01MF	50V	D3	8-719-911-19	DIODE 1SS119	
C13	1-101-004-00	CERAMIC 0.01MF	50V	D4	8-719-110-13	DIODE RD9.1ESB2	
C14	1-101-004-00	CERAMIC 0.01MF	50V	D5	8-719-911-19	DIODE 1SS119	
C15	1-124-910-11	ELECT 47MF	20% 16V	D6	8-719-911-19	DIODE 1SS119	
C16	1-124-910-11	ELECT 47MF	20% 16V	D7	8-719-911-19	DIODE 1SS119	
C17	1-124-034-51	ELECT 33MF	20% 16V			<IC>	
C18	1-101-004-00	CERAMIC 0.01MF	50V	IC1	8-759-204-21	IC TA7193P	
C19	1-102-953-00	CERAMIC 18PF	5% 50V	IC2	8-752-006-12	IC CX20061	
C20	1-102-951-00	CERAMIC 15PF	5% 50V	IC3	8-759-140-53	IC UPD4053BC	
C22	1-101-884-00	CERAMIC 56PF	5% 50V			<COIL>	
C23	1-123-369-00	ELECT 4.7MF	20% 25V	L1	1-408-533-00	COIL, VARIABLE	
C24	1-163-157-00	FILM 0.022MF	5% 50V	L2	1-408-513-00	COIL (VARIABLE)	
C25	1-163-157-00	FILM 0.022MF	5% 50V	L3	1-408-533-00	COIL, VARIABLE	
C26	1-101-004-00	CERAMIC 0.01MF	50V	L4	1-408-429-00	INDUCTOR 470UH	
C27	1-101-004-00	CERAMIC 0.01MF	50V	L5	1-408-429-00	INDUCTOR 470UH	
C28	1-124-902-00	ELECT 0.47MF	20% 50V	L6	1-408-429-00	INDUCTOR 470UH	
C29	1-101-004-00	CERAMIC 0.01MF	50V			<TRANSISTOR>	
C30	1-101-004-00	CERAMIC 0.01MF	50V	Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C31	1-124-119-00	ELECT 330MF	20% 16V	Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C34	1-109-676-00	MICA 130PF	1% 500V	Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C35	1-109-631-00	MICA 330PF	1% 500V	Q4	8-729-800-10	TRANSISTOR 2SC3068	
C36	1-102-960-00	CERAMIC 24PF	5% 50V	Q5	8-729-800-10	TRANSISTOR 2SC3068	
C39	1-109-676-00	MICA 130PF	1% 500V	Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C40	1-109-631-00	MICA 330PF	1% 500V	Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C41	1-102-960-00	CERAMIC 24PF	5% 50V	Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C42	1-101-004-00	CERAMIC 0.01MF	50V	Q9	8-729-384-48	TRANSISTOR 2SA844-E	
C50	1-102-942-00	CERAMIC 5PF	0.5PF 50V	Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C101	1-124-034-51	ELECT 33MF	20% 16V	Q11	8-729-384-48	TRANSISTOR 2SA844-E	
C102	1-101-004-00	CERAMIC 0.01MF	50V	Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C103	1-126-966-11	ELECT 33MF	20% 25V	Q13	8-729-384-48	TRANSISTOR 2SA844-E	
C104	1-124-034-51	ELECT 33MF	20% 16V	Q14	8-729-384-48	TRANSISTOR 2SA844-E	
C105	1-101-004-00	CERAMIC 0.01MF	50V	Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C106	1-126-966-11	ELECT 33MF	20% 25V	Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C107	1-101-004-00	CERAMIC 0.01MF	50V	Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C111	1-124-034-51	ELECT 33MF	20% 16V	Q18	8-729-800-10	TRANSISTOR 2SC3068	
C112	1-124-034-51	ELECT 33MF	20% 16V	Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C113	1-124-034-51	ELECT 33MF	20% 16V	Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C116	1-101-004-00	CERAMIC 0.01MF	50V				
C117	1-101-004-00	CERAMIC 0.01MF	50V				
C118	1-101-004-00	CERAMIC 0.01MF	50V				
C121	1-124-034-51	ELECT 33MF	20% 16V				
C122	1-124-034-51	ELECT 33MF	20% 16V				
C123	1-124-034-51	ELECT 33MF	20% 16V				
C126	1-101-004-00	CERAMIC 0.01MF	50V				
C127	1-101-004-00	CERAMIC 0.01MF	50V				
C128	1-101-004-00	CERAMIC 0.01MF	50V				

REF.NO.	PART NO.	DESCRIPTION	REMARK			REF.NO.	PART NO.	DESCRIPTION	REMARK		
Q21	8-729-800-10	TRANSISTOR 2SC3068				R61	1-249-420-11	CARBON	1.8K	5%	1/4W
Q101	8-729-140-97	TRANSISTOR 2SB734-34				R62	1-249-429-11	CARBON	10K	5%	1/4W
Q103	8-729-900-63	TRANSISTOR DTA124ES				R63	1-249-425-11	CARBON	4.7K	5%	1/4W
Q104	8-729-900-63	TRANSISTOR DTA124ES									
<RESISTOR>											
R1	1-249-428-11	CARBON	8.2K	5%	1/4W	R64	1-249-429-11	CARBON	10K	5%	1/4W
R2	1-249-429-11	CARBON	10K	5%	1/4W	R65	1-215-421-00	METAL	1K	1%	1/4W
R3	1-249-405-11	CARBON	100	5%	1/4W	R68	1-249-427-11	CARBON	6.8K	5%	1/4W
R4	1-249-422-11	CARBON	2.7K	5%	1/4W	R69	1-215-420-00	METAL	910	1%	1/4W
R5	1-215-421-00	METAL	1K	1%	1/4W	R70	1-215-420-00	METAL	910	1%	1/4W
R6	1-215-398-00	METAL	110	1%	1/4W	R71	1-215-417-00	METAL	680	1%	1/4W
R7	1-249-405-11	CARBON	100	5%	1/4W	R72	1-249-422-11	CARBON	2.7K	5%	1/4W
R8	1-215-421-00	METAL	1K	1%	1/4W	R73	1-249-405-11	CARBON	100	5%	1/4W
R9	1-215-421-00	METAL	1K	1%	1/4W	R74	1-215-421-00	METAL	1K	1%	1/4W
R10	1-215-423-00	METAL	1.2K	1%	1/4W	R77	1-249-427-11	CARBON	6.8K	5%	1/4W
R11	1-249-405-11	CARBON	100	5%	1/4W	R78	1-215-420-00	METAL	910	1%	1/4W
R12	1-215-425-00	METAL	1.5K	1%	1/4W	R79	1-215-420-00	METAL	910	1%	1/4W
R13	1-215-425-00	METAL	1.5K	1%	1/4W	R80	1-215-417-00	METAL	680	1%	1/4W
R14	1-215-405-00	METAL	220	1%	1/4W	R81	1-249-422-11	CARBON	2.7K	5%	1/4W
R15	1-249-405-11	CARBON	100	5%	1/4W	R82	1-249-405-11	CARBON	100	5%	1/4W
R16	1-249-433-11	CARBON	22K	5%	1/4W	R83	1-215-481-00	METAL	330K	1%	1/4W
R17	1-249-433-11	CARBON	22K	5%	1/4W	R85	1-215-429-00	METAL	2.2K	1%	1/4W
R18	1-249-421-11	CARBON	2.2K	5%	1/4W	R86	1-215-415-00	METAL	560	1%	1/4W
R19	1-249-425-11	CARBON	4.7K	5%	1/4W	R87	1-215-477-00	METAL	220K	1%	1/4W
R20	1-249-429-11	CARBON	10K	5%	1/4W	R88	1-215-457-00	METAL	33K	1%	1/4W
R22	1-249-429-11	CARBON	10K	5%	1/4W	R90	1-249-429-11	CARBON	10K	5%	1/4W
R23	1-249-431-11	CARBON	15K	5%	1/4W	R91	1-249-433-11	CARBON	22K	5%	1/4W
R24	1-249-428-11	CARBON	8.2K	5%	1/4W	R95	1-249-429-11	CARBON	10K	5%	1/4W
R25	1-249-405-11	CARBON	100	5%	1/4W	R96	1-249-433-11	CARBON	22K	5%	1/4W
R26	1-249-417-11	CARBON	1K	5%	1/4W	R101	1-249-423-11	CARBON	3.3K	5%	1/4W
R27	1-249-405-11	CARBON	100	5%	1/4W	R102	1-249-419-11	CARBON	1.5K	5%	1/4W
R28	1-249-417-11	CARBON	1K	5%	1/4W	R103	1-249-427-11	CARBON	6.8K	5%	1/4W
R29	1-249-405-11	CARBON	100	5%	1/4W	R104	1-249-422-11	CARBON	2.7K	5%	1/4W
R30	1-249-425-11	CARBON	4.7K	5%	1/4W	R105	1-249-429-11	CARBON	10K	5%	1/4W
R31	1-249-425-11	CARBON	4.7K	5%	1/4W	R202	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-249-433-11	CARBON	22K	5%	1/4W	<VARIABLE RESISTOR>					
R33	1-249-405-11	CARBON	100	5%	1/4W	RV1	1-237-500-21	RES, ADJ, CERMET	1K		
R34	1-215-425-00	METAL	1.5K	1%	1/4W	RV2	1-237-504-21	RES, ADJ, CERMET	20K		
R35	1-215-425-00	METAL	1.5K	1%	1/4W	RV3	1-237-499-21	RES, ADJ, CERMET	500		
R36	1-215-425-00	METAL	1.5K	1%	1/4W	RV4	1-237-501-21	RES, ADJ, CERMET	2K		
R37	1-215-425-00	METAL	1.5K	1%	1/4W	RV5	1-237-501-21	RES, ADJ, CERMET	2K		
R38	1-215-439-00	METAL	5.6K	1%	1/4W	<CRYSTAL>					
R39	1-215-469-00	METAL	100K	1%	1/4W	X1	1-567-505-11	OSCILLATOR, CRYSTAL			
R40	1-247-903-00	CARBON	1M	5%	1/4W	*****					
R41	1-249-427-11	CARBON	6.8K	5%	1/4W	*A-1135-391-A BD BOARD, COMPLETE (BVM-1411P ONLY)					
R42	1-249-420-11	CARBON	1.8K	5%	1/4W	*****					
R43	1-249-415-11	CARBON	680	5%	1/4W	*4-353-708-00 HOOK, FINGER					
R44	1-249-418-11	CARBON	1.2K	5%	1/4W	<CAPACITOR>					
R45	1-249-422-11	CARBON	2.7K	5%	1/4W	C1	1-102-947-00	CERAMIC	10PF	0.5PF	50V
R47	1-249-413-11	CARBON	470	5%	1/4W	C2	1-102-947-00	CERAMIC	10PF	0.5PF	50V
R49	1-249-413-11	CARBON	470	5%	1/4W	C3	1-102-963-00	CERAMIC	33PF	5%	50V
R50	1-249-405-11	CARBON	100	5%	1/4W	C4	1-101-880-00	CERAMIC	47PF	5%	50V
R51	1-215-417-00	METAL	680	1%	1/4W	C6	1-101-888-00	CERAMIC	68PF	5%	50V
R52	1-215-417-00	METAL	680	1%	1/4W	C7	1-102-963-00	CERAMIC	33PF	5%	50V
R53	1-215-413-00	METAL	470	1%	1/4W	C8	1-102-943-00	CERAMIC	6PF	0.5PF	50V
R54	1-215-443-00	METAL	8.2K	1%	1/4W	C9	1-126-964-11	ELECT	10MF	20%	16V
R55	1-249-421-11	CARBON	2.2K	5%	1/4W	C10	1-126-964-11	ELECT	10MF	20%	16V
R56	1-249-441-11	CARBON	100K	5%	1/4W	C11	1-101-004-00	CERAMIC	0.01MF		50V
R57	1-249-417-11	CARBON	1K	5%	1/4W						
R58	1-249-417-11	CARBON	1K	5%	1/4W						
R59	1-249-429-11	CARBON	10K	5%	1/4W						
R60	1-249-433-11	CARBON	22K	5%	1/4W						

7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC5	8-759-140-53	IC UPD4053BC		R5	1-215-395-00	METAL	82 1% 1/4W
IC6	8-759-800-81	IC LA7016		R6	1-215-421-00	METAL	1K 1% 1/4W
IC7	8-759-145-58	IC UPC4558C		R7	1-215-421-00	METAL	1K 1% 1/4W
IC8	8-759-145-58	IC UPC4558C		R8	1-215-423-00	METAL	1.2K 1% 1/4W
				R9	1-215-421-00	METAL	1K 1% 1/4W
				R10	1-215-421-00	METAL	1K 1% 1/4W
<COIL>				R11	1-215-391-00	METAL	56 1% 1/4W
L1	1-408-533-00	COIL, VARIABLE		R12	1-215-427-00	METAL	1.8K 1% 1/4W
L2	1-408-532-00	COIL, VARIABLE		R13	1-249-425-11	CARBON	4.7K 5% 1/4W
L3	9-910-999-31	COIL (VARIABLE)		R14	1-249-429-11	CARBON	10K 5% 1/4W
L4	1-408-421-00	INDUCTOR 100UH		R15	1-249-429-11	CARBON	10K 5% 1/4W
L5	1-408-429-00	INDUCTOR 470UH		R17	1-249-433-11	CARBON	22K 5% 1/4W
L6	1-408-429-00	INDUCTOR 470UH		R18	1-215-425-00	METAL	1.5K 1% 1/4W
L8	1-408-421-00	INDUCTOR 100UH		R19	1-215-425-00	METAL	1.5K 1% 1/4W
L101	1-408-421-00	INDUCTOR 100UH		R20	1-215-425-00	METAL	1.5K 1% 1/4W
L102	1-408-421-00	INDUCTOR 100UH		R21	1-215-425-00	METAL	1.5K 1% 1/4W
<TRANSISTOR>				R22	1-249-405-11	CARBON	100 5% 1/4W
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE		R23	1-215-441-00	METAL	6.8K 1% 1/4W
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R24	1-215-469-00	METAL	100K 1% 1/4W
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R25	1-249-427-11	CARBON	6.8K 5% 1/4W
Q4	8-729-800-10	TRANSISTOR 2SC3068		R26	1-249-415-11	CARBON	680 5% 1/4W
Q5	8-729-800-10	TRANSISTOR 2SC3068		R27	1-249-415-11	CARBON	680 5% 1/4W
Q6	8-729-384-48	TRANSISTOR 2SA844-E		R28	1-249-420-11	CARBON	1.8K 5% 1/4W
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE		R29	1-249-422-11	CARBON	2.7K 5% 1/4W
Q8	8-729-384-48	TRANSISTOR 2SA844-E		R30	1-249-405-11	CARBON	100 5% 1/4W
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R31	1-247-903-00	CARBON	1M 5% 1/4W
Q10	8-729-119-76	TRANSISTOR 2SA1175-HFE		R32	1-249-429-11	CARBON	10K 5% 1/4W
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		R34	1-215-407-00	METAL	270 1% 1/4W
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE		R35	1-215-407-00	METAL	270 1% 1/4W
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		R36	1-215-413-00	METAL	470 1% 1/4W
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R37	1-215-443-00	METAL	8.2K 1% 1/4W
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE		R38	1-249-441-11	CARBON	100K 5% 1/4W
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R39	1-215-425-00	METAL	1.5K 1% 1/4W
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R40	1-215-421-00	METAL	1K 1% 1/4W
Q18	8-729-600-19	TRANSISTOR 2SK381-A		R41	1-215-429-00	METAL	2.2K 1% 1/4W
Q20	8-729-119-76	TRANSISTOR 2SA1175-HFE		R42	1-215-445-00	METAL	10K 1% 1/4W
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE		R43	1-215-421-00	METAL	1K 1% 1/4W
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE		R44	1-249-433-11	CARBON	22K 5% 1/4W
Q23	8-729-384-48	TRANSISTOR 2SA844-E		R45	1-249-429-11	CARBON	10K 5% 1/4W
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE		R46	1-249-429-11	CARBON	10K 5% 1/4W
Q25	8-729-800-10	TRANSISTOR 2SC3068		R47	1-249-441-11	CARBON	100K 5% 1/4W
Q26	8-729-600-19	TRANSISTOR 2SK381-A		R48	1-249-425-11	CARBON	4.7K 5% 1/4W
Q28	8-729-119-76	TRANSISTOR 2SA1175-HFE		R54	1-249-422-11	CARBON	2.7K 5% 1/4W
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE		R55	1-215-418-00	METAL	750 1% 1/4W
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE		R56	1-215-420-00	METAL	910 1% 1/4W
Q31	8-729-384-48	TRANSISTOR 2SA844-E		R57	1-249-415-11	CARBON	680 5% 1/4W
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE		R58	1-249-422-11	CARBON	2.7K 5% 1/4W
Q33	8-729-800-10	TRANSISTOR 2SC3068		R59	1-249-422-11	CARBON	2.7K 5% 1/4W
Q34	8-729-119-78	TRANSISTOR 2SC2785-HFE		R60	1-215-418-00	METAL	750 1% 1/4W
Q35	8-729-119-78	TRANSISTOR 2SC2785-HFE		R61	1-215-420-00	METAL	910 1% 1/4W
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE		R62	1-249-415-11	CARBON	680 5% 1/4W
Q38	8-729-119-78	TRANSISTOR 2SC2785-HFE		R63	1-249-422-11	CARBON	2.7K 5% 1/4W
Q101	8-729-140-97	TRANSISTOR 2SB734-34		R64	1-215-477-00	METAL	220K 1% 1/4W
Q102	8-729-320-62	TRANSISTOR 2SD789-34		R65	1-215-435-00	METAL	3.9K 1% 1/4W
Q103	8-729-900-63	TRANSISTOR DTA124ES		R66	1-249-405-11	CARBON	100 5% 1/4W
Q104	8-729-900-63	TRANSISTOR DTA124ES		R70	1-247-903-00	CARBON	1M 5% 1/4W
<RESISTOR>				R71	1-249-429-11	CARBON	10K 5% 1/4W
R1	1-249-428-11	CARBON 8.2K 5%	1/4W	R72	1-249-429-11	CARBON	10K 5% 1/4W
R2	1-249-429-11	CARBON 10K 5%	1/4W	R73	1-249-429-11	CARBON	10K 5% 1/4W
R3	1-249-422-11	CARBON 2.7K 5%	1/4W	R74	1-249-417-11	CARBON	1K 5% 1/4W
R4	1-215-425-00	METAL 1.5K 1%	1/4W	R75	1-249-427-11	CARBON	6.8K 5% 1/4W
				R76	1-249-427-11	CARBON	6.8K 5% 1/4W
				R77	1-249-425-11	CARBON	4.7K 5% 1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK			REF.NO.	PART NO.	DESCRIPTION	REMARK		
R78	1-215-424-00	METAL	1.3K	1%	1/4W	R320	1-215-472-00	METAL	130K	1%	1/4W
R79	1-215-419-00	METAL	820	1%	1/4W	R353	1-249-432-11	CARBON	18K	5%	1/4W
R80	1-215-425-00	METAL	1.5K	1%	1/4W	R354	1-249-432-11	CARBON	18K	5%	1/4W
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	R400	1-215-429-00	METAL	2.2K	1%	1/4W
R82	1-249-425-11	CARBON	4.7K	5%	1/4W						
R83	1-249-435-11	CARBON	33K	5%	1/4W			<VARIABLE RESISTOR>			
R84	1-249-435-11	CARBON	33K	5%	1/4W	RV1	1-237-515-21	RES. ADJ. CERMET	1K		
R85	1-247-903-00	CARBON	1M	5%	1/4W	RV2	1-237-499-21	RES. ADJ. CERMET	500		
R86	1-249-429-11	CARBON	10K	5%	1/4W	RV3	1-237-501-21	RES. ADJ. CERMET	2K		
R87	1-249-429-11	CARBON	10K	5%	1/4W	RV4	1-237-501-21	RES. ADJ. CERMET	2K		
R88	1-249-429-11	CARBON	10K	5%	1/4W	RV5	1-237-517-21	RES. ADJ. CERMET	5K		
R89	1-249-417-11	CARBON	1K	5%	1/4W	RV6	1-237-517-21	RES. ADJ. CERMET	5K		
R90	1-249-427-11	CARBON	6.8K	5%	1/4W	RV7	1-237-504-21	RES. ADJ. CERMET	20K		
R91	1-249-427-11	CARBON	6.8K	5%	1/4W	RV8	1-237-504-21	RES. ADJ. CERMET	20K		
R92	1-249-425-11	CARBON	4.7K	5%	1/4W	RV9	1-237-517-21	RES. ADJ. CERMET	5K		
R93	1-215-424-00	METAL	1.3K	1%	1/4W	RV10	1-237-517-21	RES. ADJ. CERMET	5K		
R94	1-215-419-00	METAL	820	1%	1/4W			<CRYSTAL>			
R95	1-215-425-00	METAL	1.5K	1%	1/4W	X1	1-567-504-11	OSCILLATOR, CRYSTAL			
R96	1-249-422-11	CARBON	2.7K	5%	1/4W	X2	1-567-409-11	VIBRATOR, CRYSTAL			
R97	1-249-425-11	CARBON	4.7K	5%	1/4W			*****			
R98	1-249-435-11	CARBON	33K	5%	1/4W			*A-1135-537-A	BG BOARD, COMPLETE		
R99	1-249-435-11	CARBON	33K	5%	1/4W				*****		
R100	1-215-438-00	METAL	5.1K	1%	1/4W			*4-353-708-00	HOOK, FINGER		
R101	1-215-438-00	METAL	5.1K	1%	1/4W						
R102	1-215-438-00	METAL	5.1K	1%	1/4W			<CAPACITOR>			
R103	1-215-438-00	METAL	5.1K	1%	1/4W	C1	1-124-910-11	ELECT	47MF	20%	16V
R104	1-249-437-11	CARBON	47K	5%	1/4W	C2	1-124-910-11	ELECT	47MF	20%	16V
R105	1-249-438-11	CARBON	56K	5%	1/4W	C3	1-126-964-11	ELECT	10MF	20%	16V
R106	1-249-417-11	CARBON	1K	5%	1/4W	C4	1-124-910-11	ELECT	47MF	20%	16V
R107	1-249-417-11	CARBON	1K	5%	1/4W	C7	1-101-004-00	CERAMIC	0.01MF		50V
R108	1-249-417-11	CARBON	1K	5%	1/4W	C8	1-101-004-00	CERAMIC	0.01MF		50V
R109	1-249-417-11	CARBON	1K	5%	1/4W	C9	1-101-004-00	CERAMIC	0.01MF		50V
R110	1-249-417-11	CARBON	1K	5%	1/4W	C10	1-102-935-00	CERAMIC	2PF	0.25PF	50V
R115	1-215-438-00	METAL	5.1K	1%	1/4W	C12	1-101-004-00	CERAMIC	0.01MF		50V
R116	1-215-438-00	METAL	5.1K	1%	1/4W	C16	1-101-004-00	CERAMIC	0.01MF		50V
R120	1-249-429-11	CARBON	10K	5%	1/4W	C20	1-124-903-11	ELECT	1MF	20%	50V
R121	1-249-429-11	CARBON	10K	5%	1/4W	C22	1-101-004-00	CERAMIC	0.01MF		50V
R130	1-215-477-00	METAL	220K	1%	1/4W	C26	1-101-004-00	CERAMIC	0.01MF		50V
R150	1-249-441-11	CARBON	100K	5%	1/4W	C32	1-101-004-00	CERAMIC	0.01MF		50V
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	C33	1-136-165-00	FILM	0.1MF	5%	50V
R202	1-249-423-11	CARBON	3.3K	5%	1/4W	C34	1-136-165-00	FILM	0.1MF	5%	50V
R203	1-249-422-11	CARBON	2.7K	5%	1/4W	C35	1-136-165-00	FILM	0.1MF	5%	50V
R204	1-249-423-11	CARBON	3.3K	5%	1/4W	C53	1-124-915-11	ELECT	10MF	20%	25V
R220	1-249-441-11	CARBON	100K	5%	1/4W	C54	1-101-004-00	CERAMIC	0.01MF		50V
R221	1-249-433-11	CARBON	22K	5%	1/4W	C101	1-126-103-11	ELECT	470MF	20%	16V
R222	1-249-433-11	CARBON	22K	5%	1/4W	C102	1-126-101-11	ELECT	100MF	20%	16V
R250	1-215-415-00	METAL	560	1%	1/4W	C103	1-124-119-00	ELECT	330MF	20%	16V
R251	1-215-415-00	METAL	560	1%	1/4W	C105	1-124-119-00	ELECT	330MF	20%	16V
R252	1-215-421-00	METAL	1K	1%	1/4W	C106	1-126-101-11	ELECT	100MF	20%	16V
R254	1-249-429-11	CARBON	10K	5%	1/4W	C111	1-126-964-11	ELECT	10MF	20%	16V
R255	1-249-441-11	CARBON	100K	5%	1/4W	C112	1-101-004-00	CERAMIC	0.01MF		50V
R259	1-215-421-00	METAL	1K	1%	1/4W	C113	1-101-004-00	CERAMIC	0.01MF		50V
R301	1-215-469-00	METAL	100K	1%	1/4W	C114	1-101-004-00	CERAMIC	0.01MF		50V
R302	1-215-491-00	METAL	820K	1%	1/4W	C115	1-101-004-00	CERAMIC	0.01MF		50V
R303	1-249-418-11	CARBON	1.2K	5%	1/4W	C116	1-101-004-00	CERAMIC	0.01MF		50V
R305	1-249-431-11	CARBON	15K	5%	1/4W	C117	1-101-004-00	CERAMIC	0.01MF		50V
R306	1-249-428-11	CARBON	8.2K	5%	1/4W	C131	1-126-103-11	ELECT	470MF	20%	16V
R307	1-249-417-11	CARBON	1K	5%	1/4W	C132	1-126-101-11	ELECT	100MF	20%	16V
R308	1-249-417-11	CARBON	1K	5%	1/4W						
R310	1-249-422-11	CARBON	2.7K	5%	1/4W						
R314	1-215-417-00	METAL	680	1%	1/4W						
R315	1-249-422-11	CARBON	2.7K	5%	1/4W						
R316	1-249-413-11	CARBON	470	5%	1/4W						
R317	1-249-413-11	CARBON	470	5%	1/4W						

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C133	1-124-119-00	ELECT 330MF 20%	16V	IC4	8-757-182-14	IC CX-718D-1	
C135	1-124-119-00	ELECT 330MF 20%	16V	IC5	8-759-140-53	IC UPD4053BC	
C136	1-126-101-11	ELECT 100MF 20%	16V				
C141	1-101-004-00	CERAMIC 0.01MF	50V	IC6	8-759-140-53	IC UPD4053BC	
C142	1-101-004-00	CERAMIC 0.01MF	50V	IC7	8-759-503-91	IC TL082ACP	
C143	1-101-004-00	CERAMIC 0.01MF	50V				
C144	1-101-004-00	CERAMIC 0.01MF	50V			<COIL>	
C145	1-101-004-00	CERAMIC 0.01MF	50V				
C146	1-101-004-00	CERAMIC 0.01MF	50V	L2	1-408-408-00	INDUCTOR 8.2UH	
C147	1-101-004-00	CERAMIC 0.01MF	50V				
		<COMPOSITION CIRCUIT BLOCK>				<TRANSISTOR>	
CP11	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP12	1-232-728-11	COMPOSITION CIRCUIT BLOCK		Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP13	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP14	1-233-018-11	COMPOSITION CIRCUIT BLOCK		Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP15	1-233-019-11	COMPOSITION CIRCUIT BLOCK		Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP16	1-233-031-11	COMPOSITION CIRCUIT BLOCK		Q10	8-729-384-48	TRANSISTOR 2SA844-E	
CP17	1-233-032-11	COMPOSITION CIRCUIT BLOCK		Q11	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP18	1-233-013-11	COMPOSITION CIRCUIT BLOCK		Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP19	1-233-017-11	COMPOSITION CIRCUIT BLOCK		Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP20	1-232-752-11	COMPOSITION CIRCUIT BLOCK		Q14	8-729-800-10	TRANSISTOR 2SC3068	
CP21	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q21	8-729-384-48	TRANSISTOR 2SA844-E	
CP22	1-232-728-11	COMPOSITION CIRCUIT BLOCK		Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP23	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP25	1-232-730-11	COMPOSITION CIRCUIT BLOCK		Q24	8-729-600-19	TRANSISTOR 2SK381-A	
CP26	1-232-730-11	COMPOSITION CIRCUIT BLOCK		Q25	8-729-384-48	TRANSISTOR 2SA844-E	
CP27	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP28	1-232-752-11	COMPOSITION CIRCUIT BLOCK		Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP29	1-232-728-11	COMPOSITION CIRCUIT BLOCK		Q28	8-729-600-19	TRANSISTOR 2SK381-A	
CP30	1-232-728-11	COMPOSITION CIRCUIT BLOCK		Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP31	1-232-734-11	COMPOSITION CIRCUIT BLOCK		Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP32	1-232-728-11	COMPOSITION CIRCUIT BLOCK		Q31	8-729-384-48	TRANSISTOR 2SA844-E	
CP33	1-232-738-11	COMPOSITION CIRCUIT BLOCK		Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP41	1-233-014-11	COMPOSITION CIRCUIT BLOCK		Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CP42	1-233-014-11	COMPOSITION CIRCUIT BLOCK		Q34	8-729-600-19	TRANSISTOR 2SK381-A	
		<TRIMMER>		Q35	8-729-384-48	TRANSISTOR 2SA844-E	
CV2	1-141-181-11	CAP, TRIMMER		Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE	
CV3	1-141-171-00	CAP, TRIMMER 20P		Q37	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<DIODE>		Q38	8-729-600-19	TRANSISTOR 2SK381-A	
D1	8-719-911-19	DIODE 1SS119		Q39	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D2	8-719-911-19	DIODE 1SS119		Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D5	8-719-911-19	DIODE 1SS119		Q41	8-729-384-48	TRANSISTOR 2SA844-E	
D6	8-719-911-19	DIODE 1SS119		Q42	8-729-384-48	TRANSISTOR 2SA844-E	
D7	8-719-911-19	DIODE 1SS119		Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D16	8-719-911-19	DIODE 1SS119		Q44	8-729-384-48	TRANSISTOR 2SA844-E	
D17	8-719-911-19	DIODE 1SS119		Q45	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<DELAY LINE>		Q49	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DL1	1-415-477-11	DELAY LINE		Q50	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DL2	1-415-458-11	DELAY LINE		Q71	8-729-384-48	TRANSISTOR 2SA844-E	
DL3	1-406-769-11	DELAY LINE		Q72	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DL4	1-406-769-11	DELAY LINE		Q73	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<IC>		Q74	8-729-384-48	TRANSISTOR 2SA844-E	
IC1	8-759-800-81	IC LA7016		Q75	8-729-800-10	TRANSISTOR 2SC3068	
IC2	8-766-001-49	TRANSISTOR TX-429M		Q76	8-729-900-63	TRANSISTOR DTA124ES	
IC3	8-759-145-58	IC UPC4558C		Q77	8-729-900-63	TRANSISTOR DTA124ES	
				Q81	8-729-384-48	TRANSISTOR 2SA844-E	
				Q82	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q83	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q84	8-729-384-48	TRANSISTOR 2SA844-E	
				Q85	8-729-800-10	TRANSISTOR 2SC3068	
						<RESISTOR>	

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R1	1-249-405-11	CARBON	100 5% 1/4W	R70	1-249-422-11	CARBON	2.7K 5% 1/4W
R2	1-215-396-00	METAL	91 1% 1/4W	R71	1-247-903-00	CARBON	1M 5% 1/4W
R3	1-215-431-00	METAL	2.7K 1% 1/4W	R72	1-247-866-11	CARBON	30K 5% 1/4W
R4	1-249-419-11	CARBON	1.5K 5% 1/4W	R73	1-215-445-00	METAL	10K 1% 1/4W
R6	1-249-405-11	CARBON	100 5% 1/4W	R74	1-249-420-11	CARBON	1.8K 5% 1/4W
R7	1-249-405-11	CARBON	100 5% 1/4W	R75	1-249-422-11	CARBON	2.7K 5% 1/4W
R8	1-249-429-11	CARBON	10K 5% 1/4W	R76	1-249-405-11	CARBON	100 5% 1/4W
R10	1-247-830-11	CARBON	910 5% 1/4W	R77	1-249-422-11	CARBON	2.7K 5% 1/4W
R11	1-249-417-11	CARBON	1K 5% 1/4W	R78	1-249-422-11	CARBON	2.7K 5% 1/4W
R12	1-249-417-11	CARBON	1K 5% 1/4W	R79	1-249-422-11	CARBON	2.7K 5% 1/4W
R13	1-215-462-00	METAL	51K 1% 1/4W	R80	1-249-405-11	CARBON	100 5% 1/4W
R14	1-249-426-11	CARBON	5.6K 5% 1/4W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R15	1-247-903-00	CARBON	1M 5% 1/4W	R82	1-247-903-00	CARBON	1M 5% 1/4W
R16	1-215-477-00	METAL	220K 1% 1/4W	R83	1-249-420-11	CARBON	1.8K 5% 1/4W
R17	1-249-429-11	CARBON	10K 5% 1/4W	R84	1-249-405-11	CARBON	100 5% 1/4W
R18	1-249-429-11	CARBON	10K 5% 1/4W	R85	1-247-866-11	CARBON	30K 5% 1/4W
R19	1-249-417-11	CARBON	1K 5% 1/4W	R86	1-215-445-00	METAL	10K 1% 1/4W
R20	1-215-421-00	METAL	1K 1% 1/4W	R87	1-249-422-11	CARBON	2.7K 5% 1/4W
R21	1-215-421-00	METAL	1K 1% 1/4W	R88	1-215-430-00	METAL	2.4K 1% 1/4W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R89	1-215-443-00	METAL	8.2K 1% 1/4W
R23	1-215-409-00	METAL	330 1% 1/4W	R90	1-249-430-11	CARBON	12K 5% 1/4W
R24	1-215-380-00	METAL	20 1% 1/4W	R91	1-249-405-11	CARBON	100 5% 1/4W
R25	1-215-380-00	METAL	20 1% 1/4W	R92	1-247-830-11	CARBON	910 5% 1/4W
R26	1-215-409-00	METAL	330 1% 1/4W	R93	1-215-421-00	METAL	1K 1% 1/4W
R27	1-249-429-11	CARBON	10K 5% 1/4W	R94	1-249-422-11	CARBON	2.7K 5% 1/4W
R28	1-249-417-11	CARBON	1K 5% 1/4W	R98	1-249-422-11	CARBON	2.7K 5% 1/4W
R29	1-215-418-00	METAL	750 1% 1/4W	R99	1-249-422-11	CARBON	2.7K 5% 1/4W
R30	1-249-422-11	CARBON	2.7K 5% 1/4W	R161	1-215-438-00	METAL	5.1K 1% 1/4W
R31	1-249-405-11	CARBON	100 5% 1/4W	R162	1-249-431-11	CARBON	15K 5% 1/4W
R32	1-249-420-11	CARBON	1.8K 5% 1/4W	R163	1-249-417-11	CARBON	1K 5% 1/4W
R33	1-249-429-11	CARBON	10K 5% 1/4W	R164	1-215-435-00	METAL	3.9K 1% 1/4W
R34	1-249-428-11	CARBON	8.2K 5% 1/4W	R165	1-249-422-11	CARBON	2.7K 5% 1/4W
R35	1-249-417-11	CARBON	1K 5% 1/4W	R166	1-249-422-11	CARBON	2.7K 5% 1/4W
R36	1-249-422-11	CARBON	2.7K 5% 1/4W	R167	1-215-409-00	METAL	330 1% 1/4W
R37	1-249-405-11	CARBON	100 5% 1/4W	R168	1-215-412-00	METAL	430 1% 1/4W
R40	1-249-425-11	CARBON	4.7K 5% 1/4W	R169	1-215-427-00	METAL	1.8K 1% 1/4W
R41	1-249-422-11	CARBON	2.7K 5% 1/4W	R170	1-249-425-11	CARBON	4.7K 5% 1/4W
R42	1-249-417-11	CARBON	1K 5% 1/4W	R171	1-215-436-00	METAL	4.3K 1% 1/4W
R43	1-249-417-11	CARBON	1K 5% 1/4W	R172	1-249-431-11	CARBON	15K 5% 1/4W
R44	1-249-431-11	CARBON	15K 5% 1/4W	R173	1-249-417-11	CARBON	1K 5% 1/4W
R45	1-249-423-11	CARBON	3.3K 5% 1/4W	R174	1-215-435-00	METAL	3.9K 1% 1/4W
R46	1-249-417-11	CARBON	1K 5% 1/4W	R175	1-249-422-11	CARBON	2.7K 5% 1/4W
R47	1-249-423-11	CARBON	3.3K 5% 1/4W	R176	1-249-422-11	CARBON	2.7K 5% 1/4W
R48	1-249-422-11	CARBON	2.7K 5% 1/4W	R177	1-215-409-00	METAL	330 1% 1/4W
R49	1-249-405-11	CARBON	100 5% 1/4W	R178	1-215-414-00	METAL	510 1% 1/4W
R50	1-249-422-11	CARBON	2.7K 5% 1/4W	R179	1-215-422-00	METAL	1.1K 1% 1/4W
R51	1-247-903-00	CARBON	1M 5% 1/4W	R180	1-249-425-11	CARBON	4.7K 5% 1/4W
R52	1-247-866-11	CARBON	30K 5% 1/4W	R181	1-215-380-00	METAL	20 1% 1/4W
R53	1-215-445-00	METAL	10K 1% 1/4W	R182	1-215-380-00	METAL	20 1% 1/4W
R54	1-249-420-11	CARBON	1.8K 5% 1/4W	R183	1-249-433-11	CARBON	22K 5% 1/4W
R55	1-249-422-11	CARBON	2.7K 5% 1/4W	R184	1-249-425-11	CARBON	4.7K 5% 1/4W
R56	1-249-405-11	CARBON	100 5% 1/4W	R201	1-249-437-11	CARBON	47K 5% 1/4W
R57	1-249-422-11	CARBON	2.7K 5% 1/4W	R202	1-249-429-11	CARBON	10K 5% 1/4W
R58	1-249-422-11	CARBON	2.7K 5% 1/4W	R203	1-249-435-11	CARBON	33K 5% 1/4W
R59	1-249-422-11	CARBON	2.7K 5% 1/4W	R204	1-247-872-11	CARBON	51K 5% 1/4W
R61	1-249-422-11	CARBON	2.7K 5% 1/4W	<VARIABLE RESISTOR>			
R62	1-249-417-11	CARBON	1K 5% 1/4W	RV1	1-237-514-21	RES, ADJ, CERMET 500	
R63	1-249-417-11	CARBON	1K 5% 1/4W	RV2	1-237-508-21	RES, ADJ, CERMET 500K	
R64	1-249-431-11	CARBON	15K 5% 1/4W	RV3	1-237-498-21	RES, ADJ, CERMET 200	
R65	1-249-423-11	CARBON	3.3K 5% 1/4W	RV4	1-237-500-21	RES, ADJ, CERMET 1K	
R66	1-249-417-11	CARBON	1K 5% 1/4W	RV5	1-237-500-21	RES, ADJ, CERMET 1K	
R67	1-249-423-11	CARBON	3.3K 5% 1/4W				
R68	1-249-422-11	CARBON	2.7K 5% 1/4W				
R69	1-249-405-11	CARBON	100 5% 1/4W				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV21	1-237-517-21	RES, ADJ, CERMET 5K		C104	1-126-964-11	ELECT 10MF 20% 16V	
RV22	1-237-517-21	RES, ADJ, CERMET 5K		C105	1-161-021-11	CERAMIC 0.047MF 10% 25V	
<SWITCH>				C106	1-101-004-00	CERAMIC 0.01MF 50V	
S1	1-570-857-11	SWITCH, SLIDE		C107	1-161-021-11	CERAMIC 0.047MF 10% 25V	
*****				C108	1-101-004-00	CERAMIC 0.01MF 50V	
*A-1135-359-A	BH BOARD, COMPLETE	*****		C109	1-101-004-00	CERAMIC 0.01MF 50V	
*4-353-708-00	HOOK, FINGER			C110	1-101-880-00	CERAMIC 47PF 5% 50V	
<CAPACITOR>				C201	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C1	1-124-034-51	ELECT 33MF 20% 16V		C202	1-102-942-00	CERAMIC 5PF 0.5PF 50V	
C2	1-124-034-51	ELECT 33MF 20% 16V		C203	1-102-959-00	CERAMIC 22PF 5% 50V	
C3	1-124-034-51	ELECT 33MF 20% 16V		C204	1-126-964-11	ELECT 10MF 20% 16V	
C4	1-124-034-51	ELECT 33MF 20% 16V		C205	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C5	1-124-034-51	ELECT 33MF 20% 16V		C206	1-101-004-00	CERAMIC 0.01MF 50V	
C6	1-124-034-51	ELECT 33MF 20% 16V		C207	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C7	1-124-034-51	ELECT 33MF 20% 16V		C208	1-101-004-00	CERAMIC 0.01MF 50V	
C8	1-124-034-51	ELECT 33MF 20% 16V		C209	1-101-004-00	CERAMIC 0.01MF 50V	
C9	1-124-034-51	ELECT 33MF 20% 16V		C210	1-101-880-00	CERAMIC 47PF 5% 50V	
C10	1-124-034-51	ELECT 33MF 20% 16V		C301	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C11	1-124-034-51	ELECT 33MF 20% 16V		C302	1-102-942-00	CERAMIC 5PF 0.5PF 50V	
C12	1-124-034-51	ELECT 33MF 20% 16V		C303	1-102-959-00	CERAMIC 22PF 5% 50V	
C13	1-124-034-51	ELECT 33MF 20% 16V		C304	1-126-964-11	ELECT 10MF 20% 16V	
C14	1-124-034-51	ELECT 33MF 20% 16V		C305	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C15	1-101-004-00	CERAMIC 0.01MF 50V		C306	1-101-004-00	CERAMIC 0.01MF 50V	
C16	1-101-004-00	CERAMIC 0.01MF 50V		C307	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C17	1-101-004-00	CERAMIC 0.01MF 50V		C308	1-101-004-00	CERAMIC 0.01MF 50V	
C18	1-101-004-00	CERAMIC 0.01MF 50V		C309	1-101-004-00	CERAMIC 0.01MF 50V	
C20	1-123-382-00	ELECT 3.3MF 20% 50V		C310	1-101-880-00	CERAMIC 47PF 5% 50V	
C21	1-126-964-11	ELECT 10MF 20% 16V		<COMPOSITION CIRCUIT BLOCK>			
C22	1-126-964-11	ELECT 10MF 20% 16V		CP1	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C23	1-126-964-11	ELECT 10MF 20% 16V		CP2	1-232-727-11	COMPOSITION CIRCUIT BLOCK	
C24	1-126-964-11	ELECT 10MF 20% 16V		CP3	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C26	1-101-004-00	CERAMIC 0.01MF 50V		CP5	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C41	1-124-119-00	ELECT 330MF 20% 16V		CP7	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
C42	1-124-119-00	ELECT 330MF 20% 16V		CP9	1-232-735-11	COMPOSITION CIRCUIT BLOCK	
C43	1-124-119-00	ELECT 330MF 20% 16V		CP10	1-231-760-00	COMPOSITION CIRCUIT BLOCK	
C44	1-126-964-11	ELECT 10MF 20% 16V		CP12	1-232-735-11	COMPOSITION CIRCUIT BLOCK	
C45	1-126-964-11	ELECT 10MF 20% 16V		CP13	1-231-760-00	COMPOSITION CIRCUIT BLOCK	
C50	1-126-964-11	ELECT 10MF 20% 16V		CP15	1-232-735-11	COMPOSITION CIRCUIT BLOCK	
C51	1-101-004-00	CERAMIC 0.01MF 50V		CP16	1-232-749-11	COMPOSITION CIRCUIT BLOCK	
C52	1-101-004-00	CERAMIC 0.01MF 50V		CP17	1-232-096-00	COMPOSITION CIRCUIT BLOCK	
C53	1-101-004-00	CERAMIC 0.01MF 50V		CP18	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C54	1-101-004-00	CERAMIC 0.01MF 50V		CP19	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C55	1-101-004-00	CERAMIC 0.01MF 50V		CP20	1-232-736-11	COMPOSITION CIRCUIT BLOCK	
C71	1-124-119-00	ELECT 330MF 20% 16V		CP21	1-232-736-11	COMPOSITION CIRCUIT BLOCK	
C72	1-124-119-00	ELECT 330MF 20% 16V		CP22	1-232-745-11	COMPOSITION CIRCUIT BLOCK	
C73	1-124-119-00	ELECT 330MF 20% 16V		CP23	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C74	1-126-964-11	ELECT 10MF 20% 16V		CP24	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C80	1-126-964-11	ELECT 10MF 20% 16V		CP25	1-233-144-11	COMPOSITION CIRCUIT BLOCK	
C81	1-101-004-00	CERAMIC 0.01MF 50V		CP26	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C82	1-101-004-00	CERAMIC 0.01MF 50V		CP27	1-232-177-00	COMPOSITION CIRCUIT BLOCK	
C83	1-101-004-00	CERAMIC 0.01MF 50V		CP28	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C84	1-101-004-00	CERAMIC 0.01MF 50V		CP29	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C85	1-101-004-00	CERAMIC 0.01MF 50V		CP30	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C86	1-101-004-00	CERAMIC 0.01MF 50V		CP31	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
C101	1-161-021-11	CERAMIC 0.047MF 10% 25V		CP32	1-232-737-11	COMPOSITION CIRCUIT BLOCK	
C102	1-102-942-00	CERAMIC 5PF 0.5PF 50V		CP33	1-231-938-00	COMPOSITION CIRCUIT BLOCK	
C103	1-102-959-00	CERAMIC 22PF 5% 50V		CP101	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
				CP102	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
				CP103	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
				CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
				CP201	1-232-726-11	COMPOSITION CIRCUIT BLOCK	

7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R111	1-215-453-00	METAL	22K 1% 1/4W	C3	1-123-369-00	ELECT	4.7MF 20% 25V
R112	1-249-419-11	CARBON	1.5K 5% 1/4W	C4	1-123-369-00	ELECT	4.7MF 20% 25V
R113	1-249-405-11	CARBON	100 5% 1/4W	C5	1-102-973-00	CERAMIC	100PF 5% 50V
R114	1-215-445-00	METAL	10K 1% 1/4W	C7	1-124-916-11	ELECT	22MF 20% 25V
R115	1-215-445-00	METAL	10K 1% 1/4W	C8	1-123-369-00	ELECT	4.7MF 20% 25V
R116	1-249-429-11	CARBON	10K 5% 1/4W	C11	1-126-964-11	ELECT	10MF 20% 16V
R117	1-215-493-00	METAL	1M 1% 1/4W	C12	1-101-004-00	CERAMIC	0.01MF 50V
R120	1-215-451-00	METAL	18K 1% 1/4W	C13	1-101-004-00	CERAMIC	0.01MF 50V
R121	1-215-453-00	METAL	22K 1% 1/4W	C14	1-101-004-00	CERAMIC	0.01MF 50V
R201	1-247-903-00	CARBON	1M 5% 1/4W	C15	1-126-233-11	ELECT	22MF 20% 16V
R202	1-249-431-11	CARBON	15K 5% 1/4W	C16	1-126-964-11	ELECT	10MF 20% 16V
R203	1-249-419-11	CARBON	1.5K 5% 1/4W	C17	1-101-004-00	CERAMIC	0.01MF 50V
R204	1-249-430-11	CARBON	12K 5% 1/4W	C18	1-101-004-00	CERAMIC	0.01MF 50V
R205	1-249-409-11	CARBON	220 5% 1/4W	C19	1-101-004-00	CERAMIC	0.01MF 50V
R206	1-249-419-11	CARBON	1.5K 5% 1/4W	C41	1-124-034-51	ELECT	33MF 20% 16V
R207	1-215-425-00	METAL	1.5K 1% 1/4W	C42	1-124-034-51	ELECT	33MF 20% 16V
R208	1-249-415-11	CARBON	680 5% 1/4W	C43	1-124-034-51	ELECT	33MF 20% 16V
R209	1-249-419-11	CARBON	1.5K 5% 1/4W	C44	1-124-034-51	ELECT	33MF 20% 16V
R210	1-215-427-00	METAL	1.8K 1% 1/4W	C45	1-124-034-51	ELECT	33MF 20% 16V
R211	1-215-453-00	METAL	22K 1% 1/4W	C46	1-124-034-51	ELECT	33MF 20% 16V
R212	1-249-419-11	CARBON	1.5K 5% 1/4W	C51	1-101-004-00	CERAMIC	0.01MF 50V
R213	1-249-405-11	CARBON	100 5% 1/4W	C52	1-101-004-00	CERAMIC	0.01MF 50V
R214	1-215-445-00	METAL	10K 1% 1/4W	C53	1-101-004-00	CERAMIC	0.01MF 50V
R215	1-215-445-00	METAL	10K 1% 1/4W	C54	1-101-004-00	CERAMIC	0.01MF 50V
R216	1-249-429-11	CARBON	10K 5% 1/4W	C55	1-101-004-00	CERAMIC	0.01MF 50V
R217	1-215-455-00	METAL	27K 1% 1/4W	C56	1-101-004-00	CERAMIC	0.01MF 50V
R301	1-247-903-00	CARBON	1M 5% 1/4W	C57	1-101-004-00	CERAMIC	0.01MF 50V
R302	1-249-431-11	CARBON	15K 5% 1/4W	C71	1-124-034-51	ELECT	33MF 20% 16V
R303	1-249-419-11	CARBON	1.5K 5% 1/4W	C72	1-124-034-51	ELECT	33MF 20% 16V
R304	1-249-430-11	CARBON	12K 5% 1/4W	C73	1-124-034-51	ELECT	33MF 20% 16V
R305	1-249-409-11	CARBON	220 5% 1/4W	C74	1-124-034-51	ELECT	33MF 20% 16V
R306	1-249-419-11	CARBON	1.5K 5% 1/4W	C75	1-124-034-51	ELECT	33MF 20% 16V
R307	1-215-425-00	METAL	1.5K 1% 1/4W	C76	1-124-034-51	ELECT	33MF 20% 16V
R308	1-249-415-11	CARBON	680 5% 1/4W	C81	1-101-004-00	CERAMIC	0.01MF 50V
R309	1-249-419-11	CARBON	1.5K 5% 1/4W	C82	1-101-004-00	CERAMIC	0.01MF 50V
R310	1-215-427-00	METAL	1.8K 1% 1/4W	C83	1-101-004-00	CERAMIC	0.01MF 50V
R311	1-215-453-00	METAL	22K 1% 1/4W	C84	1-101-004-00	CERAMIC	0.01MF 50V
R312	1-249-419-11	CARBON	1.5K 5% 1/4W	C85	1-101-004-00	CERAMIC	0.01MF 50V
R313	1-249-405-11	CARBON	100 5% 1/4W	C86	1-101-004-00	CERAMIC	0.01MF 50V
R314	1-215-445-00	METAL	10K 1% 1/4W	C87	1-101-004-00	CERAMIC	0.01MF 50V
R315	1-215-445-00	METAL	10K 1% 1/4W	C101	1-101-004-00	CERAMIC	0.01MF 50V
R316	1-249-429-11	CARBON	10K 5% 1/4W	C102	1-124-903-11	ELECT	1MF 20% 50V
				C104	1-126-964-11	ELECT	10MF 20% 16V
<VARIABLE RESISTOR>				C105	1-101-004-00	CERAMIC	0.01MF 50V
RV1	1-237-505-21	RES, ADJ, CERMET 50K		C106	1-136-161-00	FILM	0.047MF 5% 50V
RV2	1-237-505-21	RES, ADJ, CERMET 50K		C107	1-102-937-00	CERAMIC	4PF 0.25PF 50V
RV3	1-237-505-21	RES, ADJ, CERMET 50K		C108	1-101-880-00	CERAMIC	47PF 5% 50V
<SWITCH>				C109	1-136-161-00	FILM	0.047MF 5% 50V
S1	1-570-857-11	SWITCH, SLIDE		C110	1-136-161-00	FILM	0.047MF 5% 50V
S2	1-570-851-11	SWITCH, SLIDE		C114	1-102-951-00	CERAMIC	15PF 5% 50V
*****				C115	1-136-153-00	FILM	0.01MF 5% 50V
*A-1135-360-A BI BOARD, COMPLETE				C116	1-102-973-00	CERAMIC	100PF 5% 50V
*****				C117	1-101-004-00	CERAMIC	0.01MF 50V
*4-353-708-00 HOOK, FINGER				C118	1-101-004-00	CERAMIC	0.01MF 50V
<CAPACITOR>				C119	1-102-953-00	CERAMIC	18PF 5% 50V
C1	1-130-481-00	MYLAR	0.0068MF 5% 50V	C120	1-102-038-00	CERAMIC	0.001MF 500V
C2	1-136-165-00	FILM	0.1MF 5% 50V	C122	1-102-943-00	CERAMIC	6PF 0.5PF 50V
				C201	1-101-004-00	CERAMIC	0.01MF 50V
				C202	1-124-903-11	ELECT	1MF 20% 50V
				C204	1-126-964-11	ELECT	10MF 20% 16V
				C205	1-101-004-00	CERAMIC	0.01MF 50V
				C206	1-136-161-00	FILM	0.047MF 5% 50V
				C207	1-102-937-00	CERAMIC	4PF 0.25PF 50V

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C208	1-101-880-00	CERAMIC	47PF 5%	50V	D202	8-719-016-42	DIODE MC932
C209	1-136-161-00	FILM	0.047MF 5%	50V	D203	8-719-109-74	DIODE RD4.3ESB1
C210	1-136-161-00	FILM	0.047MF 5%	50V			
C214	1-102-951-00	CERAMIC	15PF 5%	50V	D204	8-719-911-19	DIODE 1SS119
C215	1-136-153-00	FILM	0.01MF 5%	50V	D205	8-719-109-93	DIODE RD6.2ESB2
					D301	8-719-911-19	DIODE 1SS119
C216	1-102-973-00	CERAMIC	100PF 5%	50V	D302	8-719-016-42	DIODE MC932
C217	1-101-004-00	CERAMIC	0.01MF	50V	D303	8-719-109-74	DIODE RD4.3ESB1
C218	1-101-004-00	CERAMIC	0.01MF	50V			
C219	1-102-953-00	CERAMIC	18PF 5%	50V	D304	8-719-911-19	DIODE 1SS119
C220	1-102-038-00	CERAMIC	0.001MF	500V	D305	8-719-109-93	DIODE RD6.2ESB2
C222	1-102-943-00	CERAMIC	6PF 0.5PF	50V			
C301	1-101-004-00	CERAMIC	0.01MF	50V			
C302	1-124-903-11	ELECT	1MF 20%	50V			
C304	1-126-964-11	ELECT	10MF 20%	16V			
C305	1-101-004-00	CERAMIC	0.01MF	50V			
C306	1-136-161-00	FILM	0.047MF 5%	50V			
C307	1-102-937-00	CERAMIC	4PF 0.25PF	50V			
C308	1-101-880-00	CERAMIC	47PF 5%	50V			
C309	1-136-161-00	FILM	0.047MF 5%	50V			
C310	1-136-161-00	FILM	0.047MF 5%	50V			
C314	1-102-951-00	CERAMIC	15PF 5%	50V			
C315	1-136-153-00	FILM	0.01MF 5%	50V			
C316	1-102-973-00	CERAMIC	100PF 5%	50V			
C317	1-101-004-00	CERAMIC	0.01MF	50V			
C318	1-101-004-00	CERAMIC	0.01MF	50V			
C319	1-102-953-00	CERAMIC	18PF 5%	50V			
C320	1-102-038-00	CERAMIC	0.001MF	500V			
C322	1-102-943-00	CERAMIC	6PF 0.5PF	50V			
<COMPOSITION CIRCUIT BLOCK>				<IC>			
CP3	1-231-765-00	COMPOSITION CIRCUIT BLOCK		IC1	8-759-145-58	IC UPC4558C	
CP4	1-231-765-00	COMPOSITION CIRCUIT BLOCK		IC101	8-759-140-53	IC UPD4053BC	
CP5	1-231-765-00	COMPOSITION CIRCUIT BLOCK		IC102	8-766-001-49	TRANSISTOR TX-429M	
CP6	1-231-765-00	COMPOSITION CIRCUIT BLOCK		IC103	8-759-503-91	IC TL082ACP	
CP7	1-231-765-00	COMPOSITION CIRCUIT BLOCK		IC104	8-759-503-91	IC TL082ACP	
CP101	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC105	8-759-503-91	IC TL082ACP	
CP102	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC201	8-759-140-53	IC UPD4053BC	
CP103	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC202	8-766-001-49	TRANSISTOR TX-429M	
CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK		IC203	8-759-503-91	IC TL082ACP	
CP201	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC204	8-759-503-91	IC TL082ACP	
CP202	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC205	8-759-503-91	IC TL082ACP	
CP203	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC301	8-759-140-53	IC UPD4053BC	
CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK		IC302	8-766-001-49	TRANSISTOR TX-429M	
CP301	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC303	8-759-503-91	IC TL082ACP	
CP302	1-233-012-11	COMPOSITION CIRCUIT BLOCK		IC304	8-759-503-91	IC TL082ACP	
				IC305	8-759-503-91	IC TL082ACP	
CP303	1-233-012-11	COMPOSITION CIRCUIT BLOCK					
CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
<DIODE>				<TRANSISTOR>			
D1	8-719-911-19	DIODE 1SS119		Q1	8-729-900-74	TRANSISTOR DTC143TS	
D2	8-719-911-19	DIODE 1SS119		Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D4	8-719-911-19	DIODE 1SS119		Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D5	8-719-911-19	DIODE 1SS119		Q11	8-729-201-05	TRANSISTOR 2SC2878-B	
D6	8-719-110-31	DIODE RD12ESB2		Q12	8-729-201-05	TRANSISTOR 2SC2878-B	
D7	8-719-911-19	DIODE 1SS119		Q13	8-729-201-05	TRANSISTOR 2SC2878-B	
D8	8-719-911-19	DIODE 1SS119		Q14	8-729-201-05	TRANSISTOR 2SC2878-B	
D101	8-719-911-19	DIODE 1SS119		Q15	8-729-900-65	TRANSISTOR DTA144ES	
D102	8-719-016-42	DIODE MC932		Q101	8-729-384-48	TRANSISTOR 2SA844-E	
D103	8-719-109-74	DIODE RD4.3ESB1		Q102	8-729-384-48	TRANSISTOR 2SA844-E	
D104	8-719-911-19	DIODE 1SS119		Q103	8-729-384-48	TRANSISTOR 2SA844-E	
D105	8-719-109-93	DIODE RD6.2ESB2		Q105	8-729-600-19	TRANSISTOR 2SK381-A	
D201	8-719-911-19	DIODE 1SS119		Q106	8-729-384-48	TRANSISTOR 2SA844-E	
				Q107	8-729-266-82	TRANSISTOR 2SC2668-0	
				Q108	8-729-384-48	TRANSISTOR 2SA844-E	
				Q109	8-729-600-19	TRANSISTOR 2SK381-A	
				Q110	8-729-600-19	TRANSISTOR 2SK381-A	
				Q113	8-729-600-19	TRANSISTOR 2SK381-A	
				Q114	8-729-200-17	TRANSISTOR 2SA1091-0	
				Q201	8-729-384-48	TRANSISTOR 2SA844-E	
				Q202	8-729-384-48	TRANSISTOR 2SA844-E	
				Q203	8-729-384-48	TRANSISTOR 2SA844-E	
				Q205	8-729-600-19	TRANSISTOR 2SK381-A	
				Q206	8-729-384-48	TRANSISTOR 2SA844-E	
				Q207	8-729-266-82	TRANSISTOR 2SC2668-0	
				Q208	8-729-384-48	TRANSISTOR 2SA844-E	
				Q209	8-729-600-19	TRANSISTOR 2SK381-A	
				Q210	8-729-600-19	TRANSISTOR 2SK381-A	
				Q213	8-729-600-19	TRANSISTOR 2SK381-A	
				Q214	8-729-200-17	TRANSISTOR 2SA1091-0	
				Q301	8-729-384-48	TRANSISTOR 2SA844-E	
				Q302	8-729-384-48	TRANSISTOR 2SA844-E	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R316	1-249-424-11	CARBON	3.9K 5% 1/4W	C62	1-101-880-00	CERAMIC	47PF 5% 50V
R317	1-249-419-11	CARBON	1.5K 5% 1/4W	C63	1-101-888-00	CERAMIC	68PF 5% 50V
R318	1-215-421-00	METAL	1K 1% 1/4W	C64	1-101-880-00	CERAMIC	47PF 5% 50V
R319	1-249-405-11	CARBON	100 5% 1/4W	C65	1-102-820-00	CERAMIC	330PF 5% 50V
R320	1-249-405-11	CARBON	100 5% 1/4W	C66	1-101-004-00	CERAMIC	0.01MF 50V
R321	1-249-409-11	CARBON	220 5% 1/4W	C67	1-101-880-00	CERAMIC	47PF 5% 50V
R322	1-215-427-00	METAL	1.8K 1% 1/4W	C100	1-124-910-11	ELECT	47MF 20% 16V
R323	1-249-429-11	CARBON	10K 5% 1/4W	C102	1-124-034-51	ELECT	33MF 20% 16V
R324	1-249-429-11	CARBON	10K 5% 1/4W	C106	1-101-004-00	CERAMIC	0.01MF 50V
R325	1-249-422-11	CARBON	2.7K 5% 1/4W	C108	1-124-034-51	ELECT	33MF 20% 16V
R327	1-215-453-00	METAL	22K 1% 1/4W	C109	1-101-004-00	CERAMIC	0.01MF 50V
R328	1-215-445-00	METAL	10K 1% 1/4W	C110	1-101-004-00	CERAMIC	0.01MF 50V
R336	1-215-477-00	METAL	220K 1% 1/4W	C111	1-101-004-00	CERAMIC	0.01MF 50V
R337	1-249-417-11	CARBON	1K 5% 1/4W	C112	1-101-004-00	CERAMIC	0.01MF 50V
R338	1-249-441-11	CARBON	100K 5% 1/4W	C113	1-101-004-00	CERAMIC	0.01MF 50V
R340	1-249-429-11	CARBON	10K 5% 1/4W	C114	1-126-964-11	ELECT	10MF 20% 16V
R341	1-215-469-00	METAL	100K 1% 1/4W	C115	1-101-004-00	CERAMIC	0.01MF 50V
R342	1-215-455-00	METAL	27K 1% 1/4W	C116	1-101-004-00	CERAMIC	0.01MF 50V
R343	1-215-488-00	METAL	620K 1% 1/4W	C117	1-101-004-00	CERAMIC	0.01MF 50V
R344	1-249-434-11	CARBON	27K 5% 1/4W	C118	1-126-964-11	ELECT	10MF 20% 16V
R346	1-249-417-11	CARBON	1K 5% 1/4W	C120	1-101-004-00	CERAMIC	0.01MF 50V
R347	1-249-405-11	CARBON	100 5% 1/4W	C121	1-101-004-00	CERAMIC	0.01MF 50V
*****				C122	1-101-004-00	CERAMIC	0.01MF 50V
*A-1135-361-A BJ BOARD, COMPLETE				C130	1-124-034-51	ELECT	33MF 20% 16V
*****				<COMPOSITION CIRCUIT BLOCK>			
*4-353-708-00 HOOK, FINGER				CP1	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
<CAPACITOR>				CP2	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C1	1-101-361-00	CERAMIC	150PF 5% 50V	CP3	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C2	1-101-361-00	CERAMIC	150PF 5% 50V	CP4	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C4	1-102-821-00	CERAMIC	360PF 5% 50V	CP5	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C5	1-130-473-00	MYLAR	0.0015MF 5% 50V	<DIODE>			
C11	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	D1	8-719-911-19	DIODE 1SS119	
C12	1-102-525-11	CERAMIC	68PF 5% 50V	D2	8-719-911-19	DIODE 1SS119	
C14	1-102-525-11	CERAMIC	68PF 5% 50V	D3	8-719-911-19	DIODE 1SS119	
C15	1-102-525-11	CERAMIC	68PF 5% 50V	D7	8-719-911-19	DIODE 1SS119	
C16	1-102-525-11	CERAMIC	68PF 5% 50V	D8	8-719-911-19	DIODE 1SS119	
C17	1-102-525-11	CERAMIC	68PF 5% 50V	D9	8-719-911-19	DIODE 1SS119	
C18	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	D11	8-719-016-42	DIODE MC932	
C19	1-102-973-00	CERAMIC	100PF 5% 50V	<IC>			
C20	1-102-525-11	CERAMIC	68PF 5% 50V	IC1	8-759-345-38	IC HD14538BP	
C21	1-101-361-00	CERAMIC	150PF 5% 50V	IC2	8-759-040-01	IC MC14001BCP	
C22	1-101-890-00	CERAMIC	75PF 5% 50V	IC3	8-759-240-40	IC TC4040BP	
C23	1-102-965-00	CERAMIC	39PF 5% 50V	IC4	8-759-240-40	IC TC4040BP	
C25	1-102-946-00	CERAMIC	9PF 1PF 50V	IC5	8-759-000-35	IC MC14027BCP	
C26	1-102-944-00	CERAMIC	7PF 1PF 50V	IC6	8-759-000-35	IC MC14027BCP	
C27	1-101-361-00	CERAMIC	150PF 5% 50V	IC7	8-759-000-35	IC MC14027BCP	
C28	1-130-471-00	MYLAR	0.001MF 5% 50V	IC8	8-759-000-35	IC MC14027BCP	
C29	1-130-471-00	MYLAR	0.001MF 5% 50V	IC9	8-759-000-35	IC MC14027BCP	
C30	1-101-004-00	CERAMIC	0.01MF 50V	IC10	8-759-345-38	IC HD14538BP	
C31	1-101-361-00	CERAMIC	150PF 5% 50V	IC11	8-759-345-38	IC HD14538BP	
C32	1-101-361-00	CERAMIC	150PF 5% 50V	IC12	8-759-345-38	IC HD14538BP	
C33	1-101-361-00	CERAMIC	150PF 5% 50V	IC13	8-759-040-01	IC MC14001BCP	
C34	1-101-361-00	CERAMIC	150PF 5% 50V	IC14	8-759-040-01	IC MC14001BCP	
C35	1-130-471-00	MYLAR	0.001MF 5% 50V	IC15	8-759-240-71	IC TC4071BP	
C36	1-102-824-00	CERAMIC	470PF 5% 50V	IC16	8-759-140-11	IC UPD4011BC	
C37	1-124-903-11	ELECT	1MF 20% 50V	IC17	8-759-140-11	IC UPD4011BC	
C38	1-101-004-00	CERAMIC	0.01MF 50V	IC18	8-759-000-32	IC MC14023BCP	
C39	1-101-004-00	CERAMIC	0.01MF 50V	IC19	8-759-240-81	IC TC4081BP	
C40	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C61	1-101-888-00	CERAMIC	68PF 5% 50V				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC20	8-759-240-81	IC TC4081BP		R64	1-249-425-11	CARBON 4.7K 5%	1/4W
IC21	8-759-240-71	IC TC4071BP		R65	1-249-417-11	CARBON 1K 5%	1/4W
IC22	8-759-240-71	IC TC4071BP		R66	1-249-430-11	CARBON 12K 5%	1/4W
IC23	8-759-240-73	IC TC4073BP		R67	1-249-425-11	CARBON 4.7K 5%	1/4W
IC24	8-759-240-69	IC TC4069UBP		R68	1-249-433-11	CARBON 22K 5%	1/4W
IC25	8-759-240-69	IC TC4069UBP		R69	1-249-425-11	CARBON 4.7K 5%	1/4W
IC26	8-759-041-75	IC MC14175BCP		R70	1-249-417-11	CARBON 1K 5%	1/4W
IC27	8-759-140-53	IC UPD4053BC		R71	1-249-430-11	CARBON 12K 5%	1/4W
IC28	8-759-208-04	IC TC4520BPHB		R72	1-249-433-11	CARBON 22K 5%	1/4W
IC29	8-759-345-38	IC HD14538BP		R74	1-249-430-11	CARBON 12K 5%	1/4W
<COIL>				R75	1-249-422-11	CARBON 2.7K 5%	1/4W
L1	1-408-098-00	INDUCTOR 560UH		R76	1-215-463-00	METAL 56K 1%	1/4W
L2	1-408-098-00	INDUCTOR 560UH		R77	1-215-475-00	METAL 180K 1%	1/4W
L3	1-407-715-11	INDUCTOR 680UH		R78	1-215-439-00	METAL 5.6K 1%	1/4W
<TRANSISTOR>				R79	1-249-425-11	CARBON 4.7K 5%	1/4W
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R80	1-249-433-11	CARBON 22K 5%	1/4W
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE		R81	1-249-425-11	CARBON 4.7K 5%	1/4W
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R82	1-249-415-11	CARBON 680 5%	1/4W
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R83	1-249-417-11	CARBON 1K 5%	1/4W
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE		R85	1-249-430-11	CARBON 12K 5%	1/4W
Q19	8-729-119-76	TRANSISTOR 2SA1175-HFE		R87	1-249-422-11	CARBON 2.7K 5%	1/4W
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE		R89	1-247-887-00	CARBON 220K 5%	1/4W
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE		R90	1-249-441-11	CARBON 100K 5%	1/4W
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE		R91	1-249-441-11	CARBON 100K 5%	1/4W
Q23	8-729-119-76	TRANSISTOR 2SA1175-HFE		R92	1-249-441-11	CARBON 100K 5%	1/4W
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE		R93	1-249-429-11	CARBON 10K 5%	1/4W
Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE		R94	1-249-429-11	CARBON 10K 5%	1/4W
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE		R95	1-249-441-11	CARBON 100K 5%	1/4W
<RESISTOR>				R96	1-249-417-11	CARBON 1K 5%	1/4W
R2	1-215-439-00	METAL 5.6K 1%	1/4W	R100	1-249-423-11	CARBON 3.3K 5%	1/4W
R3	1-249-422-11	CARBON 2.7K 5%	1/4W	R111	1-249-427-11	CARBON 6.8K 5%	1/4W
R4	1-215-449-00	METAL 15K 1%	1/4W	R112	1-249-429-11	CARBON 10K 5%	1/4W
R5	1-249-441-11	CARBON 100K 5%	1/4W	R113	1-249-429-11	CARBON 10K 5%	1/4W
R6	1-249-425-11	CARBON 4.7K 5%	1/4W	R114	1-249-422-11	CARBON 2.7K 5%	1/4W
R7	1-215-439-00	METAL 5.6K 1%	1/4W	R115	1-249-419-11	CARBON 1.5K 5%	1/4W
R37	1-249-441-11	CARBON 100K 5%	1/4W	R116	1-249-427-11	CARBON 6.8K 5%	1/4W
R38	1-215-454-00	METAL 24K 1%	1/4W	R117	1-249-429-11	CARBON 10K 5%	1/4W
R39	1-249-422-11	CARBON 2.7K 5%	1/4W	R118	1-249-429-11	CARBON 10K 5%	1/4W
R42	1-249-433-11	CARBON 22K 5%	1/4W	R119	1-249-422-11	CARBON 2.7K 5%	1/4W
R43	1-247-876-11	CARBON 75K 5%	1/4W	R120	1-249-419-11	CARBON 1.5K 5%	1/4W
R44	1-249-429-11	CARBON 10K 5%	1/4W	R121	1-249-417-11	CARBON 1K 5%	1/4W
R45	1-249-441-11	CARBON 100K 5%	1/4W	R122	1-249-417-11	CARBON 1K 5%	1/4W
R46	1-249-441-11	CARBON 100K 5%	1/4W	R123	1-249-413-11	CARBON 470 5%	1/4W
R47	1-247-862-11	CARBON 20K 5%	1/4W	R124	1-249-417-11	CARBON 1K 5%	1/4W
R48	1-215-467-00	METAL 82K 1%	1/4W	R125	1-249-417-11	CARBON 1K 5%	1/4W
R49	1-249-422-11	CARBON 2.7K 5%	1/4W	R126	1-249-417-11	CARBON 1K 5%	1/4W
R50	1-215-469-00	METAL 100K 1%	1/4W	R127	1-249-417-11	CARBON 1K 5%	1/4W
R51	1-215-445-00	METAL 10K 1%	1/4W	R128	1-249-417-11	CARBON 1K 5%	1/4W
R52	1-247-885-00	CARBON 180K 5%	1/4W	R129	1-249-417-11	CARBON 1K 5%	1/4W
R53	1-215-449-00	METAL 15K 1%	1/4W	<VARIABLE RESISTOR>			
R54	1-249-422-11	CARBON 2.7K 5%	1/4W	RV1	1-237-504-21	RES, ADJ, CERMET 20K	
R56	1-249-434-11	CARBON 27K 5%	1/4W	RV3	1-237-504-21	RES, ADJ, CERMET 20K	
R57	1-249-422-11	CARBON 2.7K 5%	1/4W	RV4	1-237-503-21	RES, ADJ, CERMET 10K	
R58	1-249-425-11	CARBON 4.7K 5%	1/4W	RV5	1-237-506-21	RES, ADJ, CERMET 100K	
R59	1-247-836-11	CARBON 1.6K 5%	1/4W	RV6	1-237-505-21	RES, ADJ, CERMET 50K	
R60	1-249-427-11	CARBON 6.8K 5%	1/4W	RV7	1-237-504-21	RES, ADJ, CERMET 20K	
R61	1-215-449-00	METAL 15K 1%	1/4W	RV8	1-237-504-21	RES, ADJ, CERMET 20K	
R62	1-249-433-11	CARBON 22K 5%	1/4W	RV9	1-237-505-21	RES, ADJ, CERMET 50K	
R63	1-249-425-11	CARBON 4.7K 5%	1/4W				

BJ

BK

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<SWITCH>							
S1	1-570-857-11	SWITCH, SLIDE		C107	1-101-004-00	CERAMIC 0.01MF	50V
*****				C108	1-106-371-00	MYLAR 0.015MF	10% 200V
*A-1135-362-A BK BOARD, COMPLETE				C109	1-124-046-00	ELECT 10MF	20% 160V
*****				C110	1-102-973-00	CERAMIC 100PF	5% 50V
*2-365-226-00 HEAT SINK				C111	1-102-965-00	CERAMIC 39PF	5% 50V
*4-370-970-01 SPACER, TR				C112	1-102-942-00	CERAMIC 5PF	1PF 50V
*4-379-411-01 RETAINER (BK), TR				C114	1-102-936-00	CERAMIC 3PF	0.25PF 50V
*4-902-345-01 HEAT SINK				C115	1-101-880-00	CERAMIC 47PF	5% 50V
<CONNECTOR>				C133	1-102-942-00	CERAMIC 5PF	1PF 50V
BK1	*1-566-056-11	PIN, CONNECTOR 4P		C200	1-136-165-00	FILM 0.1MF	5% 50V
BK2	*1-566-056-11	PIN, CONNECTOR 4P		C202	1-124-046-00	ELECT 10MF	20% 160V
BK3	*1-566-056-11	PIN, CONNECTOR 4P		C203	1-102-976-00	CERAMIC 180PF	5% 50V
BK4	*1-566-055-11	PIN, CONNECTOR 3P		C204	1-136-110-00	FILM 0.91MF	5% 200V
BK5	*1-566-057-11	PIN, CONNECTOR 5P		C205	1-124-034-51	ELECT 33MF	20% 16V
BK6	*1-566-043-11	PIN, CONNECTOR 4P		C206	1-126-967-11	ELECT 47MF	20% 25V
BK7	*1-566-043-11	PIN, CONNECTOR 4P		C207	1-101-004-00	CERAMIC 0.01MF	50V
BK8	*1-566-043-11	PIN, CONNECTOR 4P		C208	1-106-371-00	MYLAR 0.015MF	10% 200V
<CAPACITOR>				C209	1-124-046-00	ELECT 10MF	20% 160V
C1	1-130-483-00	MYLAR 0.01MF	5%	C210	1-102-973-00	CERAMIC 100PF	5% 50V
C10	1-123-939-00	ELECT 10MF	20%	C211	1-102-965-00	CERAMIC 39PF	5% 50V
C11	1-130-483-00	MYLAR 0.01MF	5%	C212	1-102-942-00	CERAMIC 5PF	1PF 50V
C51	1-101-004-00	CERAMIC 0.01MF		C214	1-102-936-00	CERAMIC 3PF	0.25PF 50V
C52	1-101-004-00	CERAMIC 0.01MF		C215	1-101-880-00	CERAMIC 47PF	5% 50V
C53	1-101-004-00	CERAMIC 0.01MF		C233	1-102-942-00	CERAMIC 5PF	1PF 50V
C54	1-101-004-00	CERAMIC 0.01MF		C300	1-136-165-00	FILM 0.1MF	5% 50V
C55	1-101-004-00	CERAMIC 0.01MF		C302	1-124-046-00	ELECT 10MF	20% 160V
C56	1-101-004-00	CERAMIC 0.01MF		C303	1-102-976-00	CERAMIC 180PF	5% 50V
C64	1-124-034-51	ELECT 33MF	20%	C304	1-136-110-00	FILM 0.91MF	5% 200V
C65	1-124-034-51	ELECT 33MF	20%	C305	1-124-034-51	ELECT 33MF	20% 16V
C66	1-124-034-51	ELECT 33MF	20%	C306	1-126-967-11	ELECT 47MF	20% 25V
C67	1-124-034-51	ELECT 33MF	20%	C307	1-101-004-00	CERAMIC 0.01MF	50V
C68	1-124-034-51	ELECT 33MF	20%	C308	1-106-371-00	MYLAR 0.015MF	10% 200V
C69	1-124-034-51	ELECT 33MF	20%	C309	1-124-046-00	ELECT 10MF	20% 160V
C70	1-124-034-51	ELECT 33MF	20%	C310	1-102-973-00	CERAMIC 100PF	5% 50V
C71	1-124-034-51	ELECT 33MF	20%	C311	1-102-965-00	CERAMIC 39PF	5% 50V
C72	1-124-034-51	ELECT 33MF	20%	C312	1-102-942-00	CERAMIC 5PF	1PF 50V
C73	1-124-034-51	ELECT 33MF	20%	C314	1-102-936-00	CERAMIC 3PF	0.25PF 50V
C74	1-124-034-51	ELECT 33MF	20%	C315	1-101-880-00	CERAMIC 47PF	5% 50V
C75	1-124-034-51	ELECT 33MF	20%	C333	1-102-942-00	CERAMIC 5PF	1PF 50V
C76	1-124-034-51	ELECT 33MF	20%	<TRIMMER>			
C80	1-123-939-00	ELECT 10MF	20%	CV101	1-141-179-12	CAP, VAR, TRIMMER	
C81	1-123-939-00	ELECT 10MF	20%	CV102	1-141-171-00	CAP, TRIMMER 15P	
C82	1-123-939-00	ELECT 10MF	20%	CV201	1-141-179-12	CAP, VAR, TRIMMER	
C83	1-124-808-51	ELECT 10MF	20%	CV202	1-141-171-00	CAP, TRIMMER 15P	
C84	1-124-808-51	ELECT 10MF	20%	CV301	1-141-179-12	CAP, VAR, TRIMMER	
C85	1-124-808-51	ELECT 10MF	20%	CV302	1-141-171-00	CAP, TRIMMER 15P	
C86	1-123-939-00	ELECT 10MF	20%	<DIODE>			
C87	1-123-939-00	ELECT 10MF	20%	D1	8-719-911-19	DIODE 1SS119	
C88	1-123-939-00	ELECT 10MF	20%	D2	8-719-911-19	DIODE 1SS119	
C91	1-102-050-00	CERAMIC 0.01MF	99%	D101	8-719-911-19	DIODE 1SS119	
C92	1-102-050-00	CERAMIC 0.01MF	99%	D102	8-719-911-19	DIODE 1SS119	
C93	1-102-050-00	CERAMIC 0.01MF	99%	D103	8-719-911-19	DIODE 1SS119	
C100	1-136-165-00	FILM 0.1MF	5%	D104	8-719-911-19	DIODE 1SS119	
C102	1-124-046-00	ELECT 10MF	20%	D105	8-719-911-19	DIODE 1SS119	
C103	1-102-976-00	CERAMIC 180PF	5%	D106	8-719-911-19	DIODE 1SS119	
C104	1-136-110-00	FILM 0.91MF	5%	D107	8-719-911-19	DIODE 1SS119	
C105	1-124-034-51	ELECT 33MF	20%	D108	8-719-911-19	DIODE 1SS119	
C106	1-126-967-11	ELECT 47MF	20%	D109	8-719-901-83	DIODE 1SS83	
				D110	8-719-300-80	DIODE RU-1C	
				D111	8-719-300-80	DIODE RU-1C	

7. ELECTRICAL PARTS LIST

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BK BT

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R124	1-249-405-11	CARBON	100 5% 1/4W	R304	1-249-405-11	CARBON	100 5% 1/4W
R125	1-249-405-11	CARBON	100 5% 1/4W	R305	1-249-424-11	CARBON	3.9K 5% 1/4W
R126	1-215-394-00	METAL	75 1% 1/4W	R306	1-249-422-11	CARBON	2.7K 5% 1/4W
R127	1-215-394-00	METAL	75 1% 1/4W	R307	1-249-405-11	CARBON	100 5% 1/4W
R128	1-214-779-00	METAL	120K 1% 1/4W	R308	1-249-405-11	CARBON	100 5% 1/4W
R129	1-249-430-11	CARBON	12K 5% 1/4W	R309	1-249-421-11	CARBON	2.2K 5% 1/4W
R130	1-216-443-11	METAL OXIDE	56K 5% 1W F	R310	1-249-405-11	CARBON	100 5% 1/4W
R131	1-249-433-11	CARBON	22K 5% 1/4W	R311	1-249-405-11	CARBON	100 5% 1/4W
R132	1-249-422-11	CARBON	2.7K 5% 1/4W	R312	1-215-391-00	METAL	56 1% 1/4W
R133	1-249-435-11	CARBON	33K 5% 1/4W	R313	1-215-391-00	METAL	56 1% 1/4W
R134	1-249-433-11	CARBON	22K 5% 1/4W	R314	1-215-437-00	METAL	4.7K 1% 1/4W
R135	1-249-426-11	CARBON	5.6K 5% 1/4W	R315	1-214-765-00	METAL	33K 1% 1/4W
R136	1-249-423-11	CARBON	3.3K 5% 1/4W	R316	1-214-765-00	METAL	33K 1% 1/4W
R137	1-247-903-00	CARBON	1M 5% 1/4W	R317	1-249-405-11	CARBON	100 5% 1/4W
R138	1-249-426-11	CARBON	5.6K 5% 1/4W	R318	1-214-781-00	METAL	150K 1% 1/4W
R139	1-215-441-00	METAL	6.8K 1% 1/4W	R319	1-215-447-00	METAL	12K 1% 1/4W
R140	1-249-405-11	CARBON	100 5% 1/4W	R320	1-216-431-11	METAL OXIDE	560 5% 1W F
R141	1-249-413-11	CARBON	470 5% 1/4W	R321	1-249-405-11	CARBON	100 5% 1/4W
R142	1-249-390-11	CARBON	5.6 5% 1/4W	R322	1-249-405-11	CARBON	100 5% 1/4W
R143	1-249-422-11	CARBON	2.7K 5% 1/4W	R323	1-215-405-00	METAL	220 1% 1/4W
R201	1-215-391-00	METAL	56 1% 1/4W	R324	1-249-405-11	CARBON	100 5% 1/4W
R202	1-249-419-11	CARBON	1.5K 5% 1/4W	R325	1-249-405-11	CARBON	100 5% 1/4W
R204	1-249-405-11	CARBON	100 5% 1/4W	R326	1-215-394-00	METAL	75 1% 1/4W
R205	1-249-424-11	CARBON	3.9K 5% 1/4W	R327	1-215-394-00	METAL	75 1% 1/4W
R206	1-249-422-11	CARBON	2.7K 5% 1/4W	R328	1-214-779-00	METAL	120K 1% 1/4W
R207	1-249-405-11	CARBON	100 5% 1/4W	R329	1-249-430-11	CARBON	12K 5% 1/4W
R208	1-249-405-11	CARBON	100 5% 1/4W	R330	1-216-443-11	METAL OXIDE	56K 5% 1W F
R209	1-249-421-11	CARBON	2.2K 5% 1/4W	R331	1-249-433-11	CARBON	22K 5% 1/4W
R210	1-249-405-11	CARBON	100 5% 1/4W	R332	1-249-422-11	CARBON	2.7K 5% 1/4W
R211	1-249-405-11	CARBON	100 5% 1/4W	R333	1-249-435-11	CARBON	33K 5% 1/4W
R212	1-215-391-00	METAL	56 1% 1/4W	R334	1-249-433-11	CARBON	22K 5% 1/4W
R213	1-215-391-00	METAL	56 1% 1/4W	R335	1-249-426-11	CARBON	5.6K 5% 1/4W
R214	1-215-437-00	METAL	4.7K 1% 1/4W	R336	1-249-423-11	CARBON	3.3K 5% 1/4W
R215	1-214-765-00	METAL	33K 1% 1/4W	R337	1-247-903-00	CARBON	1M 5% 1/4W
R216	1-214-765-00	METAL	33K 1% 1/4W	R338	1-249-426-11	CARBON	5.6K 5% 1/4W
R217	1-249-405-11	CARBON	100 5% 1/4W	R339	1-215-441-00	METAL	6.8K 1% 1/4W
R218	1-214-781-00	METAL	150K 1% 1/4W	R340	1-249-405-11	CARBON	100 5% 1/4W
R219	1-215-447-00	METAL	12K 1% 1/4W	R341	1-249-413-11	CARBON	470 5% 1/4W
R220	1-216-431-11	METAL OXIDE	560 5% 1W F	R342	1-249-390-11	CARBON	5.6 5% 1/4W
R221	1-249-405-11	CARBON	100 5% 1/4W	R343	1-249-422-11	CARBON	2.7K 5% 1/4W
R222	1-249-405-11	CARBON	100 5% 1/4W	*****			
R223	1-215-405-00	METAL	220 1% 1/4W	*A-1135-606-B BT BOARD, COMPLETE (BVM-1311 ONLY)			
R224	1-249-405-11	CARBON	100 5% 1/4W	*****			
R225	1-249-405-11	CARBON	100 5% 1/4W	*4-353-708-00 HOOK, FINGER			
R226	1-215-394-00	METAL	75 1% 1/4W	<CAPACITOR>			
R227	1-215-394-00	METAL	75 1% 1/4W	C1	1-124-477-11	ELECT	47MF 20% 16V
R228	1-214-779-00	METAL	120K 1% 1/4W	C3	1-124-477-11	ELECT	47MF 20% 16V
R229	1-249-430-11	CARBON	12K 5% 1/4W	C4	1-124-477-11	ELECT	47MF 20% 16V
R230	1-216-443-11	METAL OXIDE	56K 5% 1W F	C5	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R231	1-249-433-11	CARBON	22K 5% 1/4W	C6	1-124-477-11	ELECT	47MF 20% 16V
R232	1-249-422-11	CARBON	2.7K 5% 1/4W	C9	1-163-369-11	CERAMIC CHIP	47PF 5% 50V
R233	1-249-435-11	CARBON	33K 5% 1/4W	C10	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R234	1-249-433-11	CARBON	22K 5% 1/4W	C14	1-163-101-00	CERAMIC CHIP	22PF 5% 50V
R235	1-249-426-11	CARBON	5.6K 5% 1/4W	C15	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R236	1-249-423-11	CARBON	3.3K 5% 1/4W	C16	1-163-227-11	CERAMIC CHIP	10PF 0.5PF 50V
R237	1-247-903-00	CARBON	1M 5% 1/4W	C17	1-163-093-00	CERAMIC CHIP	10PF 5% 50V
R238	1-249-426-11	CARBON	5.6K 5% 1/4W	C18	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R239	1-215-441-00	METAL	6.8K 1% 1/4W	C19	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R240	1-249-405-11	CARBON	100 5% 1/4W	C20	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R241	1-249-413-11	CARBON	470 5% 1/4W	C21	1-163-038-00	CERAMIC CHIP	0.1MF 25V
R242	1-249-390-11	CARBON	5.6 5% 1/4W				
R243	1-249-422-11	CARBON	2.7K 5% 1/4W				
R301	1-215-391-00	METAL	56 1% 1/4W				
R302	1-249-419-11	CARBON	1.5K 5% 1/4W				

7. ELECTRICAL PARTS LIST

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BT

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
CV3	1-141-304-21	TRIMMER, CERAMIC
CV4	1-141-304-21	TRIMMER, CERAMIC
CV5	1-141-304-21	TRIMMER, CERAMIC
CV6	1-141-304-21	TRIMMER, CERAMIC

<DIODE>

D1	8-719-104-34	DIODE 1S2836
D2	8-719-105-91	DIODE RD5.6M-B2
D3	8-719-400-18	DIODE MA152WK
D4	8-719-400-18	DIODE MA152WK
D5	8-719-400-18	DIODE MA152WK
D6	8-719-104-34	DIODE 1S2836
D7	8-719-400-18	DIODE MA152WK
D8	8-719-104-34	DIODE 1S2836
D9	8-719-104-34	DIODE 1S2836
D331	8-719-400-18	DIODE MA152WK
D341	8-719-400-18	DIODE MA152WK
D361	8-719-400-18	DIODE MA152WK

<DELAY LINE>

DL1	1-415-348-21	DELAY LINE
DL2	1-415-477-11	DELAY LINE
DL3	1-415-700-11	DELAY LINE
DL4	1-415-654-12	DELAY LINE
DL5	1-415-700-11	DELAY LINE
DL6	1-415-700-11	DELAY LINE
DL7	1-415-348-21	DELAY LINE
DL8	1-415-700-11	DELAY LINE
DL9	1-415-727-11	DELAY LINE

<FILTER>

FL1	1-236-562-11	FILTER, LOW PASS
FL2	1-236-561-11	FILTER, LOW PASS
FL3	1-236-732-11	FILTER, LOW PASS

<IC>

IC1	8-759-800-81	IC LA7016
IC2	8-759-800-81	IC LA7016
IC3	8-759-520-06	IC XRA17809T
IC4	8-759-701-75	IC NJM7805FA
IC331	8-752-334-78	IC CXL1009P-1
IC341	8-752-334-78	IC CXL1009P-1
IC361	8-752-330-14	IC CXL1009P
IC501	8-752-053-68	IC CXA1539P

<IC SOCKET>

ICS331	1-526-656-00	SOCKET, IC (DP) 20P
ICS341	1-526-656-00	SOCKET, IC (DP) 20P
ICS361	1-526-656-00	SOCKET, IC (DP) 20P
ICS501*1	1-526-659-00	SOCKET, IC (DP) 28P

<RESISTOR>

JW1	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW2	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW3	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW5	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW11	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW12	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW13	1-216-295-00	METAL GLAZE	0	5%	1/10W

REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
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JW14	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW15	1-216-295-00	METAL GLAZE	0	5%	1/10W

<COIL>

L1	1-410-196-11	INDUCTOR CHIP	2.2UH
L2	1-410-200-31	INDUCTOR CHIP	4.7UH
L3	1-410-192-51	INDUCTOR CHIP	1UH
L4	1-216-296-91	METAL GLAZE	0 5% 1/8W
L5	1-216-296-91	METAL GLAZE	0 5% 1/8W
L6	1-410-196-11	INDUCTOR CHIP	2.2UH
L7	1-410-470-11	INDUCTOR	10UH
L8	1-410-470-11	INDUCTOR	10UH
L9	1-410-204-31	INDUCTOR CHIP	10UH
L10	1-408-419-00	INDUCTOR	68UH
L11	1-410-200-31	INDUCTOR CHIP	4.7UH
L12	1-410-200-31	INDUCTOR CHIP	4.7UH
L13	1-410-196-11	INDUCTOR CHIP	2.2UH
L14	1-410-204-31	INDUCTOR CHIP	10UH
L15	1-410-216-31	INDUCTOR CHIP	100UH

<TRANSISTOR>

Q1	8-729-216-22	TRANSISTOR	2SA1162-G
Q2	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q3	8-729-122-63	TRANSISTOR	2SA1226-E4
Q4	8-729-175-72	TRANSISTOR	2SC2757-T33
Q5	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q6	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q7	8-729-122-63	TRANSISTOR	2SA1226-E4
Q8	8-729-216-22	TRANSISTOR	2SA1162-G
Q9	8-729-122-63	TRANSISTOR	2SA1226-E4
Q10	8-729-175-72	TRANSISTOR	2SC2757-T33
Q11	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q12	8-729-122-63	TRANSISTOR	2SA1226-E4
Q13	8-729-175-72	TRANSISTOR	2SC2757-T33
Q14	8-729-175-72	TRANSISTOR	2SC2757-T33
Q15	8-729-216-22	TRANSISTOR	2SA1162-G
Q16	8-729-107-46	TRANSISTOR	2SC3624A-L15
Q17	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q18	8-729-216-22	TRANSISTOR	2SA1162-G
Q19	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q20	8-729-175-72	TRANSISTOR	2SC2757-T33
Q21	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q22	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q23	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q24	8-729-216-22	TRANSISTOR	2SA1162-G
Q25	8-729-107-46	TRANSISTOR	2SC3624A-L15
Q32	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q33	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q34	8-729-216-22	TRANSISTOR	2SA1162-G
Q35	8-729-216-22	TRANSISTOR	2SA1162-G
Q36	8-729-122-63	TRANSISTOR	2SA1226-E4
Q37	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q38	8-729-122-63	TRANSISTOR	2SA1226-E4
Q39	8-729-175-72	TRANSISTOR	2SC2757-T33
Q40	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q41	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q42	8-729-216-22	TRANSISTOR	2SA1162-G
Q43	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q44	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q45	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q52	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q54	8-729-216-22	TRANSISTOR	2SA1162-G

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q56	8-729-122-63	TRANSISTOR 2SA1226-E4		R45	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q57	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R46	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q58	8-729-122-63	TRANSISTOR 2SA1226-E4		R47	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q59	8-729-175-72	TRANSISTOR 2SC2757-T33		R48	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q60	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R49	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q61	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R50	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q62	8-729-216-22	TRANSISTOR 2SA1162-G		R51	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q65	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R52	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q71	8-729-175-72	TRANSISTOR 2SC2757-T33		R53	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q72	8-729-122-63	TRANSISTOR 2SA1226-E4		R54	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q73	8-729-175-72	TRANSISTOR 2SC2757-T33		R55	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
Q74	8-729-122-63	TRANSISTOR 2SA1226-E4		R56	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q81	8-729-901-06	TRANSISTOR DTA144EK		R57	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q82	8-729-901-01	TRANSISTOR DTC144EK		R58	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q83	8-729-901-06	TRANSISTOR DTA144EK		R59	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q84	8-729-901-06	TRANSISTOR DTA144EK		R60	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q85	8-729-140-97	TRANSISTOR 2SB734-34		R61	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
Q86	8-729-140-96	TRANSISTOR 2SD774-34		R62	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
<RESISTOR>				R63	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R1	1-216-025-00	METAL GLAZE 100 5% 1/10W		R64	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R2	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R65	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R3	1-216-097-00	METAL GLAZE 100K 5% 1/10W		R66	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R4	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R67	1-216-659-11	METAL CHIP 2.2K 0.50% 1/10W	
R5	1-216-097-00	METAL GLAZE 100K 5% 1/10W		R68	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
R6	1-216-025-00	METAL GLAZE 100 5% 1/10W		R69	1-216-659-11	METAL CHIP 2.2K 0.50% 1/10W	
R7	1-216-075-00	METAL GLAZE 12K 5% 1/10W		R70	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R8	1-216-643-11	METAL CHIP 470 0.50% 1/10W		R71	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R9	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W		R72	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R10	1-216-643-11	METAL CHIP 470 0.50% 1/10W		R73	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R11	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W		R74	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R12	1-216-675-11	METAL CHIP 10K 0.50% 1/10W		R75	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R13	1-216-049-00	METAL GLAZE 1K 5% 1/10W		R76	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R14	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W		R77	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R15	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R78	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R16	1-216-025-00	METAL GLAZE 100 5% 1/10W		R79	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R17	1-216-075-00	METAL GLAZE 12K 5% 1/10W		R80	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R18	1-216-025-00	METAL GLAZE 100 5% 1/10W		R81	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R19	1-216-025-00	METAL GLAZE 100 5% 1/10W		R82	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R20	1-216-025-00	METAL GLAZE 100 5% 1/10W		R83	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R21	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R84	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R22	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		R85	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R23	1-216-635-11	METAL CHIP 220 0.50% 1/10W		R86	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R24	1-216-635-11	METAL CHIP 220 0.50% 1/10W		R87	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R25	1-216-075-00	METAL GLAZE 12K 5% 1/10W		R88	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R26	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W		R89	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R27	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		R103	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R28	1-216-025-00	METAL GLAZE 100 5% 1/10W		R104	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R29	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R105	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R30	1-216-651-11	METAL CHIP 1K 0.50% 1/10W		R106	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R31	1-216-025-00	METAL GLAZE 100 5% 1/10W		R107	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R33	1-216-665-11	METAL CHIP 3.9K 0.50% 1/10W		R108	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R34	1-216-049-00	METAL GLAZE 1K 5% 1/10W		R109	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R35	1-216-651-11	METAL CHIP 1K 0.50% 1/10W		R110	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R36	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R111	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R37	1-216-025-00	METAL GLAZE 100 5% 1/10W		R112	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R38	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W		R113	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R39	1-216-635-11	METAL CHIP 220 0.50% 1/10W		R114	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R40	1-216-630-11	METAL CHIP 130 0.50% 1/10W		R115	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R41	1-216-630-11	METAL CHIP 130 0.50% 1/10W		R116	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R42	1-216-635-11	METAL CHIP 220 0.50% 1/10W		R117	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R43	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W		R118	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W	
R44	1-216-049-00	METAL GLAZE 1K 5% 1/10W		R119	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
				R120	1-216-643-11	METAL CHIP 470 0.50% 1/10W	



Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R121	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W	R211	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R122	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R212	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R123	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R213	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R124	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R214	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R125	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R215	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R126	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R216	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R127	1-216-025-00	METAL GLAZE	100 5% 1/10W	R217	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R128	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R218	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R129	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R219	1-215-881-11	METAL OXIDE	15 5% 2W F
R130	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R331	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R131	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R332	1-216-288-11	METAL GLAZE	5.6M 5% 1/8W
R132	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R341	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R133	1-216-025-00	METAL GLAZE	100 5% 1/10W	R342	1-216-288-11	METAL GLAZE	5.6M 5% 1/8W
R134	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R361	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R135	1-216-635-11	METAL CHIP	220 0.50% 1/10W	R362	1-216-288-11	METAL GLAZE	5.6M 5% 1/8W
R136	1-216-635-11	METAL CHIP	220 0.50% 1/10W	R501	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R137	1-216-025-00	METAL GLAZE	100 5% 1/10W	R502	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R138	1-216-075-00	METAL GLAZE	12K 5% 1/10W			<VARIABLE RESISTOR>	
R139	1-216-025-00	METAL GLAZE	100 5% 1/10W	RV1	1-237-515-21	RES, ADJ, CERMET	1K
R140	1-216-075-00	METAL GLAZE	12K 5% 1/10W	RV2	1-237-517-21	RES, ADJ, CERMET	5K
R141	1-216-025-00	METAL GLAZE	100 5% 1/10W	RV3	1-237-515-21	RES, ADJ, CERMET	1K
R142	1-216-075-00	METAL GLAZE	12K 5% 1/10W	RV4	1-237-515-21	RES, ADJ, CERMET	1K
R143	1-216-025-00	METAL GLAZE	100 5% 1/10W	RV5	1-237-515-21	RES, ADJ, CERMET	1K
R150	1-216-025-00	METAL GLAZE	100 5% 1/10W	RV6	1-237-517-21	RES, ADJ, CERMET	5K
R153	1-216-049-00	METAL GLAZE	1K 5% 1/10W	RV7	1-237-515-21	RES, ADJ, CERMET	1K
R154	1-216-075-00	METAL GLAZE	12K 5% 1/10W	RV8	1-237-515-21	RES, ADJ, CERMET	1K
R157	1-216-049-00	METAL GLAZE	1K 5% 1/10W	RV9	1-237-516-21	RES, ADJ, CERMET	2K
R158	1-216-075-00	METAL GLAZE	12K 5% 1/10W	RV10	1-237-515-21	RES, ADJ, CERMET	1K
R161	1-216-049-00	METAL GLAZE	1K 5% 1/10W	RV11	1-237-516-21	RES, ADJ, CERMET	2K
R163	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	RV12	1-237-515-21	RES, ADJ, CERMET	1K
R164	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W			<CRYSTAL>	
R165	1-216-025-00	METAL GLAZE	100 5% 1/10W	X1	1-567-790-11	VIBRATOR, CRYSTAL	
R166	1-216-075-00	METAL GLAZE	12K 5% 1/10W			*****	
R167	1-216-643-11	METAL CHIP	470 0.50% 1/10W			*1-617-889-13 C BOARD	
R169	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W			*****	
R170	1-216-643-11	METAL CHIP	470 0.50% 1/10W			Δ 1-526-771-11 SOCKET, CRT	
R171	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W			1-556-880-81 LEAD ASSY, HIGH-VOLTAGE	
R172	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W			<CAPACITOR>	
R173	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C1	1-162-114-00	CERAMIC	0.0047MF 2KV
R174	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C2	1-162-114-00	CERAMIC	0.0047MF 2KV
R175	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W			<CONNECTOR>	
R176	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C1	*1-566-054-11	PIN, CONNECTOR	2P
R177	1-216-025-00	METAL GLAZE	100 5% 1/10W	C2	*1-566-056-11	PIN, CONNECTOR	4P
R178	1-216-075-00	METAL GLAZE	12K 5% 1/10W	C3	*1-566-054-11	PIN, CONNECTOR	2P
R179	1-216-025-00	METAL GLAZE	100 5% 1/10W	C4	*1-566-056-11	PIN, CONNECTOR	4P
R181	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C5	*1-566-054-11	PIN, CONNECTOR	2P
R182	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	C6	*1-566-056-11	PIN, CONNECTOR	4P
R183	1-216-025-00	METAL GLAZE	100 5% 1/10W	C7	*1-508-765-00	PIN, CONNECTOR (5MM PITCH)	3P
R184	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C8	1-508-786-00	PIN, CONNECTOR (5MM PITCH)	2P
R185	1-216-643-11	METAL CHIP	470 0.50% 1/10W	C9	*1-566-054-11	PIN, CONNECTOR	2P
R186	1-216-643-11	METAL CHIP	470 0.50% 1/10W			<COIL>	
R191	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R192	1-216-075-00	METAL GLAZE	12K 5% 1/10W				
R193	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R201	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R202	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R203	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R204	1-216-033-00	METAL GLAZE	220 5% 1/10W				
R205	1-216-033-00	METAL GLAZE	220 5% 1/10W				
R206	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R207	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R208	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R209	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R210	1-216-049-00	METAL GLAZE	1K 5% 1/10W				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
L1	1-408-408-00	INDUCTOR	8.2UH	C26	1-161-051-00	CERAMIC	0.01MF 10% 50V
L2	1-408-408-00	INDUCTOR	8.2UH	C27	1-126-157-11	ELECT	10MF 20% 16V
L3	1-408-408-00	INDUCTOR	8.2UH	C28	1-126-157-11	ELECT	10MF 20% 16V
<RESISTOR>				C29	1-126-301-11	ELECT	1MF 20% 50V
R1	1-202-818-00	SOLID	1K 10% 1/2W	C30	1-161-051-00	CERAMIC	0.01MF 10% 50V
R2	1-202-818-00	SOLID	1K 10% 1/2W	C31	1-102-973-00	CERAMIC	100PF 5% 50V
R3	1-202-818-00	SOLID	1K 10% 1/2W	C32	1-101-361-00	CERAMIC	150PF 5% 50V
R4	1-249-431-11	CARBON	15K 5% 1/4W	C33	1-130-871-11	FILM	0.01MF 5% 50V
R5	1-202-818-00	SOLID	1K 10% 1/2W	C34	1-126-301-11	ELECT	1MF 20% 50V
R6	1-202-818-00	SOLID	1K 10% 1/2W	C35	1-161-051-00	CERAMIC	0.01MF 10% 50V
R7	1-202-818-00	SOLID	1K 10% 1/2W	C36	1-102-824-00	CERAMIC	470PF 5% 50V
R8	1-249-431-11	CARBON	15K 5% 1/4W	C38	1-102-824-00	CERAMIC	470PF 5% 50V
R9	1-202-818-00	SOLID	1K 10% 1/2W	C39	1-161-051-00	CERAMIC	0.01MF 10% 50V
R10	1-202-818-00	SOLID	1K 10% 1/2W	C40	1-130-871-11	FILM	0.01MF 5% 50V
R11	1-202-818-00	SOLID	1K 10% 1/2W	C41	1-126-301-11	ELECT	1MF 20% 50V
R12	1-249-431-11	CARBON	15K 5% 1/4W	C42	1-130-871-11	FILM	0.01MF 5% 50V
R13	1-202-818-00	SOLID	1K 10% 1/2W	C43	1-126-301-11	ELECT	1MF 20% 50V
R14	1-202-719-00	SOLID	1M 10% 1/2W	C44	1-124-465-00	ELECT	0.47MF 20% 50V
R15	1-216-373-11	METAL OXIDE	2.2 5% 2W F	C45	1-126-157-11	ELECT	10MF 20% 16V
<SPARK GAP>				C46	1-126-157-11	ELECT	10MF 20% 16V
SG1	1-519-422-11	GAP, SPARK		C47	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG2	1-519-422-11	GAP, SPARK		C48	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG3	1-519-422-11	GAP, SPARK		C49	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG4	1-519-422-11	GAP, SPARK		C50	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG5	1-519-422-11	GAP, SPARK		C51	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG6	1-519-422-11	GAP, SPARK		C52	1-161-051-00	CERAMIC	0.01MF 10% 50V
SG7	1-519-422-11	GAP, SPARK		C53	1-161-051-00	CERAMIC	0.01MF 10% 50V
*****				C54	1-126-157-11	ELECT	10MF 20% 16V
*A-1345-978-A DA BOARD, COMPLETE				C55	1-126-157-11	ELECT	10MF 20% 16V
*****				C56	1-161-051-00	CERAMIC	0.01MF 10% 50V
3-618-225-03 NUT, PLATE				C57	1-136-474-11	FILM	0.1MF 5% 100V
<CAPACITOR>				C58	1-130-871-11	FILM	0.01MF 5% 50V
C1	1-126-157-11	ELECT	10MF 20% 16V	C59	1-161-051-00	CERAMIC	0.01MF 10% 50V
C2	1-126-157-11	ELECT	10MF 20% 16V	C60	1-130-871-11	FILM	0.01MF 5% 50V
C3	1-161-051-00	CERAMIC	0.01MF 10% 50V	C61	1-161-051-00	CERAMIC	0.01MF 10% 50V
C4	1-101-361-00	CERAMIC	150PF 5% 50V	C62	1-130-871-11	FILM	0.01MF 5% 50V
C5	1-161-051-00	CERAMIC	0.01MF 10% 50V	C63	1-161-051-00	CERAMIC	0.01MF 10% 50V
C6	1-161-051-00	CERAMIC	0.01MF 10% 50V	C64	1-130-871-11	FILM	0.01MF 5% 50V
C7	1-101-361-00	CERAMIC	150PF 5% 50V	C65	1-161-051-00	CERAMIC	0.01MF 10% 50V
C8	1-102-527-11	CERAMIC	82PF 5% 50V	C66	1-161-051-00	CERAMIC	0.01MF 10% 50V
C9	1-101-361-00	CERAMIC	150PF 5% 50V	C67	1-126-163-11	ELECT	4.7MF 20% 25V
C10	1-106-359-00	MYLAR	0.0047MF 5% 100V	C68	1-101-361-00	CERAMIC	150PF 5% 50V
C11	1-130-738-00	FILM	0.015MF 5% 100V	C69	1-126-157-11	ELECT	10MF 20% 16V
C12	1-163-157-00	FILM	0.022MF 5% 50V	C70	1-126-157-11	ELECT	10MF 20% 16V
C13	1-136-155-00	FILM	0.015MF 5% 50V	C71	1-126-157-11	ELECT	10MF 20% 16V
C14	1-163-157-00	FILM	0.022MF 5% 50V	C72	1-126-157-11	ELECT	10MF 20% 16V
C15	1-130-479-00	MYLAR	0.0047MF 5% 50V	C73	1-161-051-00	CERAMIC	0.01MF 10% 50V
C16	1-124-589-11	ELECT	47MF 20% 16V	C74	1-126-157-11	ELECT	10MF 20% 16V
C17	1-124-234-00	ELECT	22MF 20% 16V	C75	1-126-157-11	ELECT	10MF 20% 16V
C18	1-124-234-00	ELECT	22MF 20% 16V	C76	1-136-165-00	FILM	0.1MF 5% 50V
C19	1-161-051-00	CERAMIC	0.01MF 10% 50V	C77	1-136-165-00	FILM	0.1MF 5% 50V
C20	1-130-871-11	FILM	0.01MF 5% 50V	C78	1-161-051-00	CERAMIC	0.01MF 10% 50V
C21	1-126-301-11	ELECT	1MF 20% 50V	C80	1-101-004-00	CERAMIC	0.01MF 5% 50V
C22	1-130-871-11	FILM	0.01MF 5% 50V	C90	1-136-161-00	FILM	0.047MF 5% 50V
C23	1-126-301-11	ELECT	1MF 20% 50V	C100	1-136-165-00	FILM	0.1MF 5% 50V
C24	1-126-301-11	ELECT	1MF 20% 50V	C101	1-136-165-00	FILM	0.1MF 5% 50V
C25	1-126-301-11	ELECT	1MF 20% 50V	C102	1-102-978-00	CERAMIC	220PF 5% 50V
<DIODE>				D1	8-719-911-19	DIODE ISS119	
				D2	8-719-911-19	DIODE ISS119	
				D3	8-719-109-97	DIODE RD6.8ESB2	

DA

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D4	8-719-109-97	DIODE RD6.8ESB2		Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D5	8-719-110-31	DIODE RD12ESB2		Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D6	8-719-110-31	DIODE RD12ESB2		Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D7	8-719-911-19	DIODE 1SS119		Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D8	8-719-911-19	DIODE 1SS119		Q9	8-729-800-10	TRANSISTOR 2SC3068	
D9	8-719-110-03	DIODE RD7.5ESB2		Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D10	8-719-110-03	DIODE RD7.5ESB2		Q12	8-729-900-89	TRANSISTOR DTC144ES	
D11	8-719-110-41	DIODE RD15ESB2		Q13	8-729-900-89	TRANSISTOR DTC144ES	
D12	8-719-109-89	DIODE RD5.6ESB2		Q14	8-729-900-89	TRANSISTOR DTC144ES	
D13	8-719-911-19	DIODE 1SS119		Q15	8-729-900-89	TRANSISTOR DTC144ES	
D14	8-719-911-19	DIODE 1SS119		Q16	8-729-900-89	TRANSISTOR DTC144ES	
D15	8-719-911-19	DIODE 1SS119		Q17	8-729-900-89	TRANSISTOR DTC144ES	
D18	8-719-911-19	DIODE 1SS119		Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D19	8-719-911-19	DIODE 1SS119		Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<CONNECTOR>				Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA1	*1-566-060-11	PIN, CONNECTOR 8P		Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA2	*1-566-056-11	PIN, CONNECTOR 4P		Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA3	*1-566-062-11	PIN, CONNECTOR 10P		Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA4	*1-566-058-11	PIN, CONNECTOR 6P		Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA5	*1-566-055-11	PIN, CONNECTOR 3P		Q31	8-729-900-89	TRANSISTOR DTC144ES	
DA6	*1-566-058-11	PIN, CONNECTOR 6P		<RESISTOR>			
DA7	*1-566-056-11	PIN, CONNECTOR 4P		R1	1-215-461-00	METAL 47K 1%	1/4W
<IC>				R2	1-249-417-11	CARBON 1K 5%	1/4W
IC1	8-759-984-27	IC MB84027B		R3	1-249-430-11	CARBON 12K 5%	1/4W
IC2	8-759-140-11	IC UPD4011BC		R4	1-249-417-11	CARBON 1K 5%	1/4W
IC3	8-759-000-58	IC MC14093BCP		R5	1-249-422-11	CARBON 2.7K 5%	1/4W
IC4	8-751-580-00	IC CX-158		R6	1-247-840-00	CARBON 2.4K 5%	1/4W
IC5	8-759-503-91	IC TL082ACP		R7	1-215-462-00	METAL 51K 1%	1/4W
IC6	8-759-503-91	IC TL082ACP		R8	1-249-417-11	CARBON 1K 5%	1/4W
IC7	8-759-014-96	IC MC1496P		R9	1-249-417-11	CARBON 1K 5%	1/4W
IC8	8-759-729-03	IC NJM2903D		R10	1-249-423-11	CARBON 3.3K 5%	1/4W
IC9	8-759-503-91	IC TL082ACP		R11	1-249-419-11	CARBON 1.5K 5%	1/4W
IC10	8-759-729-03	IC NJM2903D		R12	1-249-429-11	CARBON 10K 5%	1/4W
IC11	8-759-503-91	IC TL082ACP		R13	1-249-424-11	CARBON 3.9K 5%	1/4W
IC12	8-759-014-96	IC MC1496P		R14	1-249-419-11	CARBON 1.5K 5%	1/4W
IC13	8-759-000-49	IC MC14066BCP		R15	1-249-410-11	CARBON 270 5%	1/4W
IC14	8-759-000-49	IC MC14066BCP		R16	1-249-417-11	CARBON 1K 5%	1/4W
IC15	8-759-000-49	IC MC14066BCP		R17	1-215-427-00	METAL 1.8K 1%	1/4W
IC16	8-759-000-49	IC MC14066BCP		R18	1-215-435-00	METAL 3.9K 1%	1/4W
IC17	8-759-145-58	IC UPC4558C		R19	1-215-443-00	METAL 8.2K 1%	1/4W
IC18	8-759-909-70	IC CX23025		R20	1-249-400-11	CARBON 39 5%	1/4W F
IC19	8-759-145-58	IC UPC4558C		R21	1-249-429-11	CARBON 10K 5%	1/4W
IC20	8-759-145-58	IC UPC4558C		R22	1-215-445-00	METAL 10K 1%	1/4W
IC21	8-759-145-58	IC UPC4558C		R23	1-249-429-11	CARBON 10K 5%	1/4W
IC22	8-759-145-58	IC UPC4558C		R24	1-249-427-11	CARBON 6.8K 5%	1/4W
IC23	8-759-145-58	IC UPC4558C		R25	1-249-393-11	CARBON 10 5%	1/4W
IC24	8-759-701-79	IC NJM7812FA		R26	1-215-439-00	METAL 5.6K 1%	1/4W
IC25	8-759-929-65	IC LMT912CT		R27	1-249-429-11	CARBON 10K 5%	1/4W
IC26	8-759-503-91	IC TL082ACP		R28	1-215-421-00	METAL 1K 1%	1/4W
<COIL>				R29	1-215-458-00	METAL 36K 1%	1/4W
L1	1-407-504-00	INDUCTOR 10MMH		R30	1-249-429-11	CARBON 10K 5%	1/4W
<TRANSISTOR>				R31	1-249-427-11	CARBON 6.8K 5%	1/4W
Q1	8-729-900-89	TRANSISTOR DTC144ES		R32	1-249-393-11	CARBON 10 5%	1/4W
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R33	1-249-427-11	CARBON 6.8K 5%	1/4W
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R34	1-249-424-11	CARBON 3.9K 5%	1/4W
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE		R35	1-247-800-11	CARBON 51 5%	1/4W
				R36	1-249-417-11	CARBON 1K 5%	1/4W
				R37	1-249-417-11	CARBON 1K 5%	1/4W
				R38	1-249-417-11	CARBON 1K 5%	1/4W
				R39	1-249-417-11	CARBON 1K 5%	1/4W
				R40	1-249-417-11	CARBON 1K 5%	1/4W

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R41	1-247-800-11	CARBON	51 5% 1/4W	R109	1-249-437-11	CARBON	47K 5% 1/4W
R42	1-249-430-11	CARBON	12K 5% 1/4W	R110	1-249-430-11	CARBON	12K 5% 1/4W
R43	1-249-419-11	CARBON	1.5K 5% 1/4W	R111	1-249-437-11	CARBON	47K 5% 1/4W
R44	1-249-424-11	CARBON	3.9K 5% 1/4W	R112	1-249-426-11	CARBON	5.6K 5% 1/4W
R45	1-249-429-11	CARBON	10K 5% 1/4W	R113	1-249-430-11	CARBON	12K 5% 1/4W
R46	1-249-429-11	CARBON	10K 5% 1/4W	R114	1-249-437-11	CARBON	47K 5% 1/4W
R47	1-249-431-11	CARBON	15K 5% 1/4W	R115	1-249-413-11	CARBON	470 5% 1/4W
R48	1-249-429-11	CARBON	10K 5% 1/4W	R116	1-249-413-11	CARBON	470 5% 1/4W
R49	1-249-429-11	CARBON	10K 5% 1/4W	R123	1-215-445-00	METAL	10K 1% 1/4W
R50	1-249-429-11	CARBON	10K 5% 1/4W	R124	1-215-433-00	METAL	3.3K 1% 1/4W
R51	1-249-429-11	CARBON	10K 5% 1/4W	R125	1-215-443-00	METAL	8.2K 1% 1/4W
R52	1-249-417-11	CARBON	1K 5% 1/4W	R126	1-215-437-00	METAL	4.7K 1% 1/4W
R53	1-247-903-00	CARBON	1M 5% 1/4W	R127	1-249-417-11	CARBON	1K 5% 1/4W
R54	1-249-421-11	CARBON	2.2K 5% 1/4W	R128	1-249-417-11	CARBON	1K 5% 1/4W
R55	1-249-417-11	CARBON	1K 5% 1/4W	R129	1-249-405-11	CARBON	100 5% 1/4W
R56	1-249-435-11	CARBON	33K 5% 1/4W	R130	1-249-429-11	CARBON	10K 5% 1/4W
R57	1-249-429-11	CARBON	10K 5% 1/4W	R131	1-215-445-00	METAL	10K 1% 1/4W
R58	1-249-423-11	CARBON	3.3K 5% 1/4W	R132	1-215-445-00	METAL	10K 1% 1/4W
R59	1-249-429-11	CARBON	10K 5% 1/4W	R133	1-215-461-00	METAL	47K 1% 1/4W
R60	1-215-445-00	METAL	10K 1% 1/4W	R134	1-215-447-00	METAL	12K 1% 1/4W
R61	1-249-429-11	CARBON	10K 5% 1/4W	R135	1-249-427-11	CARBON	6.8K 5% 1/4W
R62	1-249-427-11	CARBON	6.8K 5% 1/4W	R136	1-249-429-11	CARBON	10K 5% 1/4W
R63	1-249-393-11	CARBON	10 5% 1/4W	R137	1-249-405-11	CARBON	100 5% 1/4W
R64	1-249-429-11	CARBON	10K 5% 1/4W	R138	1-249-417-11	CARBON	1K 5% 1/4W
R65	1-249-433-11	CARBON	22K 5% 1/4W	R139	1-249-417-11	CARBON	1K 5% 1/4W
R66	1-249-433-11	CARBON	22K 5% 1/4W	R140	1-215-421-00	METAL	1K 1% 1/4W
R67	1-249-429-11	CARBON	10K 5% 1/4W	R141	1-249-429-11	CARBON	10K 5% 1/4W
R68	1-247-903-00	CARBON	1M 5% 1/4W	R142	1-215-457-00	METAL	33K 1% 1/4W
R69	1-249-421-11	CARBON	2.2K 5% 1/4W	R143	1-215-457-00	METAL	33K 1% 1/4W
R70	1-249-435-11	CARBON	33K 5% 1/4W	R144	1-249-429-11	CARBON	10K 5% 1/4W
R71	1-249-429-11	CARBON	10K 5% 1/4W	R145	1-215-481-00	METAL	330K 1% 1/4W
R72	1-249-423-11	CARBON	3.3K 5% 1/4W	R146	1-249-429-11	CARBON	10K 5% 1/4W
R74	1-249-429-11	CARBON	10K 5% 1/4W	R147	1-249-433-11	CARBON	22K 5% 1/4W
R76	1-249-433-11	CARBON	22K 5% 1/4W	R148	1-249-405-11	CARBON	100 5% 1/4W
R77	1-249-439-11	CARBON	68K 5% 1/4W	R149	1-215-421-00	METAL	1K 1% 1/4W
R79	1-249-421-11	CARBON	2.2K 5% 1/4W	R150	1-215-457-00	METAL	33K 1% 1/4W
R80	1-249-435-11	CARBON	33K 5% 1/4W	R151	1-215-457-00	METAL	33K 1% 1/4W
R81	1-249-429-11	CARBON	10K 5% 1/4W	R152	1-215-481-00	METAL	330K 1% 1/4W
R82	1-249-423-11	CARBON	3.3K 5% 1/4W	R153	1-215-431-00	METAL	2.7K 1% 1/4W
R83	1-249-429-11	CARBON	10K 5% 1/4W	R154	1-215-413-00	METAL	470 1% 1/4W
R84	1-215-445-00	METAL	10K 1% 1/4W	R155	1-249-429-11	CARBON	10K 5% 1/4W
R85	1-249-427-11	CARBON	6.8K 5% 1/4W	R156	1-249-429-11	CARBON	10K 5% 1/4W
R86	1-249-429-11	CARBON	10K 5% 1/4W	R157	1-249-433-11	CARBON	22K 5% 1/4W
R87	1-249-393-11	CARBON	10 5% 1/4W	R158	1-249-405-11	CARBON	100 5% 1/4W
R88	1-249-429-11	CARBON	10K 5% 1/4W	R159	1-249-429-11	CARBON	10K 5% 1/4W
R89	1-249-429-11	CARBON	10K 5% 1/4W	R160	1-247-897-11	CARBON	560K 5% 1/4W
R90	1-249-417-11	CARBON	1K 5% 1/4W	R161	1-215-455-00	METAL	27K 1% 1/4W
R91	1-249-429-11	CARBON	10K 5% 1/4W	R162	1-215-445-00	METAL	10K 1% 1/4W
R92	1-249-435-11	CARBON	33K 5% 1/4W	R163	1-215-445-00	METAL	10K 1% 1/4W
R93	1-249-393-11	CARBON	10 5% 1/4W	R164	1-215-461-00	METAL	47K 1% 1/4W
R94	1-247-848-11	CARBON	5.1K 5% 1/4W	R165	1-215-461-00	METAL	47K 1% 1/4W
R95	1-249-417-11	CARBON	1K 5% 1/4W	R166	1-215-485-00	METAL	470K 1% 1/4W
R96	1-249-429-11	CARBON	10K 5% 1/4W	R167	1-249-429-11	CARBON	10K 5% 1/4W
R97	1-249-433-11	CARBON	22K 5% 1/4W	R168	1-249-429-11	CARBON	10K 5% 1/4W
R98	1-249-409-11	CARBON	220 5% 1/4W	R169	1-249-433-11	CARBON	22K 5% 1/4W
R99	1-249-405-11	CARBON	100 5% 1/4W	R170	1-249-405-11	CARBON	100 5% 1/4W
R100	1-249-417-11	CARBON	1K 5% 1/4W	R171	1-249-429-11	CARBON	10K 5% 1/4W
R101	1-249-405-11	CARBON	100 5% 1/4W	R172	1-215-445-00	METAL	10K 1% 1/4W
R102	1-249-430-11	CARBON	12K 5% 1/4W	R173	1-215-445-00	METAL	10K 1% 1/4W
R103	1-249-424-11	CARBON	3.9K 5% 1/4W	R174	1-215-457-00	METAL	33K 1% 1/4W
R104	1-247-800-11	CARBON	51 5% 1/4W	R175	1-215-457-00	METAL	33K 1% 1/4W
R105	1-249-417-11	CARBON	1K 5% 1/4W	R176	1-215-481-00	METAL	330K 1% 1/4W
R106	1-249-417-11	CARBON	1K 5% 1/4W	R177	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-424-11	CARBON	3.9K 5% 1/4W				

7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C46	1-136-161-00	FILM	0.047MF	5%	50V	IC2	8-759-145-58 IC UPC4558C
C47	1-102-973-00	CERAMIC	100PF	5%	50V	IC3	8-759-145-58 IC UPC4558C
C48	1-136-165-00	FILM	0.1MF	5%	50V	IC4	8-759-145-58 IC UPC4558C
C49	1-136-161-00	FILM	0.047MF	5%	50V	IC5	8-759-145-58 IC UPC4558C
C50	1-102-074-00	CERAMIC	0.001MF	10%	50V	IC6	8-759-145-58 IC UPC4558C
C51	1-136-161-00	FILM	0.047MF	5%	50V	IC7	8-759-145-58 IC UPC4558C
C52	1-102-074-00	CERAMIC	0.001MF	10%	50V	IC8	8-759-145-58 IC UPC4558C
C53	1-101-880-00	CERAMIC	47PF	5%	50V	IC9	8-759-140-53 IC UPD4053BC
C54	1-161-051-00	CERAMIC	0.01MF	10%	50V	IC10	8-759-140-53 IC UPD4053BC
C55	1-124-589-11	ELECT	47MF	20%	16V	IC11	8-759-140-53 IC UPD4053BC
C56	1-124-589-11	ELECT	47MF	20%	16V	IC13	8-759-701-79 IC NJM7812FA
C57	1-102-074-00	CERAMIC	0.001MF	10%	50V	IC14	8-759-929-65 IC LM7912CT
C58	1-136-161-00	FILM	0.047MF	5%	50V	IC15	8-759-345-38 IC HD14538BP
C59	1-102-973-00	CERAMIC	100PF	5%	50V	IC16	8-759-729-03 IC NJM2903D
C60	1-136-165-00	FILM	0.1MF	5%	50V	IC17	8-759-140-53 IC UPD4053BC
C61	1-136-161-00	FILM	0.047MF	5%	50V	<COIL>	
C62	1-102-074-00	CERAMIC	0.001MF	10%	50V	L1	1-408-238-00 INDUCTOR 3.9MMH
C63	1-136-161-00	FILM	0.047MF	5%	50V	L2	1-408-238-00 INDUCTOR 3.9MMH
C64	1-102-074-00	CERAMIC	0.001MF	10%	50V	L3	1-408-238-00 INDUCTOR 3.9MMH
C65	1-101-880-00	CERAMIC	47PF	5%	50V	L4	1-408-238-00 INDUCTOR 3.9MMH
C66	1-161-051-00	CERAMIC	0.01MF	10%	50V	<TRANSISTOR>	
C67	1-124-589-11	ELECT	47MF	20%	16V	Q2	8-729-119-78 TRANSISTOR 2SC2785-HFE
C68	1-124-589-11	ELECT	47MF	20%	16V	Q3	8-729-119-78 TRANSISTOR 2SC2785-HFE
C69	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q4	8-729-900-36 TRANSISTOR DTC124ES
C70	1-102-074-00	CERAMIC	0.001MF	10%	50V	Q5	8-729-119-78 TRANSISTOR 2SC2785-HFE
C71	1-124-589-11	ELECT	47MF	20%	16V	Q6	8-729-119-78 TRANSISTOR 2SC2785-HFE
C72	1-126-096-11	ELECT	10MF	20%	25V	Q7	8-729-201-05 TRANSISTOR 2SC2878-B
C73	1-126-096-11	ELECT	10MF	20%	25V	Q8	8-729-119-78 TRANSISTOR 2SC2785-HFE
C74	1-126-096-11	ELECT	10MF	20%	25V	Q9	8-729-106-07 TRANSISTOR 2SK514-H
C75	1-126-096-11	ELECT	10MF	20%	25V	Q10	8-729-900-36 TRANSISTOR DTC124ES
C76	1-126-096-11	ELECT	10MF	20%	25V	Q11	8-729-201-05 TRANSISTOR 2SC2878-B
C77	1-126-096-11	ELECT	10MF	20%	25V	Q12	8-729-201-05 TRANSISTOR 2SC2878-B
C78	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q13	8-729-106-07 TRANSISTOR 2SK514-H
C81	1-102-121-00	CERAMIC	0.0022MF	10%	50V	Q14	8-729-900-36 TRANSISTOR DTC124ES
C83	1-136-167-00	FILM	0.15MF	5%	50V	Q15	8-729-119-78 TRANSISTOR 2SC2785-HFE
C85	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q16	8-729-106-07 TRANSISTOR 2SK514-H
C86	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q17	8-729-900-36 TRANSISTOR DTC124ES
C87	1-101-361-00	CERAMIC	150PF	5%	50V	Q18	8-729-119-78 TRANSISTOR 2SC2785-HFE
C88	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q19	8-729-201-05 TRANSISTOR 2SC2878-B
C89	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q20	8-729-201-05 TRANSISTOR 2SC2878-B
C90	1-161-051-00	CERAMIC	0.01MF	10%	50V	Q21	8-729-201-05 TRANSISTOR 2SC2878-B
<DIODE>				Q22	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D2	8-719-109-97	DIODE RD6.8ESB2		Q23	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D3	8-719-911-19	DIODE 1SS119		Q24	8-729-106-07 TRANSISTOR 2SK514-H		
D4	8-719-911-19	DIODE 1SS119		Q25	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D5	8-719-911-19	DIODE 1SS119		Q26	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D6	8-719-110-03	DIODE RD7.5ESB2		Q27	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D7	8-719-110-03	DIODE RD7.5ESB2		Q28	8-729-106-07 TRANSISTOR 2SK514-H		
D8	8-719-109-97	DIODE RD6.8ESB2		Q29	8-729-119-78 TRANSISTOR 2SC2785-HFE		
D10	8-719-911-19	DIODE 1SS119		Q30	8-729-119-78 TRANSISTOR 2SC2785-HFE		
<CONNECTOR>				Q31	8-729-119-78 TRANSISTOR 2SC2785-HFE		
DB1	*1-566-049-11	PIN, CONNECTOR 10P		Q32	8-729-106-07 TRANSISTOR 2SK514-H		
DB2	*1-566-041-11	PIN, CONNECTOR 2P		Q33	8-729-119-78 TRANSISTOR 2SC2785-HFE		
DB3	*1-566-042-11	PIN, CONNECTOR 3P		Q34	8-729-119-76 TRANSISTOR 2SA1175-HFE		
DB4	*1-566-042-11	PIN, CONNECTOR 3P		Q35	8-729-119-76 TRANSISTOR 2SA1175-HFE		
DB5	*1-566-042-11	PIN, CONNECTOR 3P		Q36	8-729-119-78 TRANSISTOR 2SC2785-HFE		
<IC>				Q37	8-729-900-36 TRANSISTOR DTC124ES		
IC1	8-759-145-58	IC UPC4558C		Q38	8-729-119-76 TRANSISTOR 2SA1175-HFE		
				Q40	8-729-119-78 TRANSISTOR 2SC2785-HFE		
				Q41	8-729-119-78 TRANSISTOR 2SC2785-HFE		

DB

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
Q42	8-729-900-89	TRANSISTOR DTC144ES		R57	1-249-405-11	CARBON	100 5% 1/4W
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE		R58	1-249-405-11	CARBON	100 5% 1/4W
Q44	8-729-119-76	TRANSISTOR 2SA1175-HFE		R59	1-249-421-11	CARBON	2.2K 5% 1/4W
Q45	8-729-900-89	TRANSISTOR DTC144ES		R60	1-215-445-00	METAL	10K 1% 1/4W
Q46	8-729-900-89	TRANSISTOR DTC144ES		R61	1-249-429-11	CARBON	10K 5% 1/4W
Q47	8-729-900-65	TRANSISTOR DTA144ES		R62	1-215-445-00	METAL	10K 1% 1/4W
Q48	8-729-900-89	TRANSISTOR DTC144ES		R63	1-215-457-00	METAL	33K 1% 1/4W
Q49	8-729-900-89	TRANSISTOR DTC144ES		R64	1-249-429-11	CARBON	10K 5% 1/4W
Q101	8-729-900-89	TRANSISTOR DTC144ES		R65	1-249-405-11	CARBON	100 5% 1/4W
<RESISTOR>				R66	1-249-417-11	CARBON	1K 5% 1/4W
R3	1-249-423-11	CARBON	3.3K 5% 1/4W	R67	1-249-433-11	CARBON	22K 5% 1/4W
R4	1-249-441-11	CARBON	100K 5% 1/4W	R68	1-249-425-11	CARBON	4.7K 5% 1/4W
R5	1-249-429-11	CARBON	10K 5% 1/4W	R69	1-249-435-11	CARBON	33K 5% 1/4W
R6	1-249-420-11	CARBON	1.8K 5% 1/4W	R70	1-249-421-11	CARBON	2.2K 5% 1/4W
R7	1-249-429-11	CARBON	10K 5% 1/4W	R71	1-249-417-11	CARBON	1K 5% 1/4W
R8	1-249-429-11	CARBON	10K 5% 1/4W	R72	1-249-433-11	CARBON	22K 5% 1/4W
R9	1-249-425-11	CARBON	4.7K 5% 1/4W	R73	1-249-425-11	CARBON	4.7K 5% 1/4W
R10	1-215-467-00	METAL	82K 1% 1/4W	R74	1-247-903-00	CARBON	1M 5% 1/4W
R11	1-215-439-00	METAL	5.6K 1% 1/4W	R75	1-249-429-11	CARBON	10K 5% 1/4W
R12	1-215-477-00	METAL	220K 1% 1/4W	R76	1-249-429-11	CARBON	10K 5% 1/4W
R13	1-249-429-11	CARBON	10K 5% 1/4W	R77	1-249-429-11	CARBON	10K 5% 1/4W
R14	1-249-433-11	CARBON	22K 5% 1/4W	R78	1-215-469-00	METAL	100K 1% 1/4W
R15	1-249-433-11	CARBON	22K 5% 1/4W	R79	1-249-405-11	CARBON	100 5% 1/4W
R16	1-249-441-11	CARBON	100K 5% 1/4W	R80	1-249-417-11	CARBON	1K 5% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R81	1-249-433-11	CARBON	22K 5% 1/4W
R18	1-215-477-00	METAL	220K 1% 1/4W	R82	1-249-425-11	CARBON	4.7K 5% 1/4W
R19	1-249-429-11	CARBON	10K 5% 1/4W	R83	1-249-435-11	CARBON	33K 5% 1/4W
R20	1-249-433-11	CARBON	22K 5% 1/4W	R84	1-249-421-11	CARBON	2.2K 5% 1/4W
R21	1-249-433-11	CARBON	22K 5% 1/4W	R85	1-249-417-11	CARBON	1K 5% 1/4W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R86	1-249-433-11	CARBON	22K 5% 1/4W
R23	1-249-429-11	CARBON	10K 5% 1/4W	R87	1-249-425-11	CARBON	4.7K 5% 1/4W
R24	1-215-457-00	METAL	33K 1% 1/4W	R88	1-247-895-00	CARBON	470K 5% 1/4W
R25	1-249-405-11	CARBON	100 5% 1/4W	R89	1-247-895-00	CARBON	470K 5% 1/4W
R26	1-249-417-11	CARBON	1K 5% 1/4W	R90	1-249-429-11	CARBON	10K 5% 1/4W
R27	1-249-433-11	CARBON	22K 5% 1/4W	R91	1-249-429-11	CARBON	10K 5% 1/4W
R28	1-249-425-11	CARBON	4.7K 5% 1/4W	R92	1-215-469-00	METAL	100K 1% 1/4W
R29	1-249-435-11	CARBON	33K 5% 1/4W	R93	1-249-405-11	CARBON	100 5% 1/4W
R30	1-249-421-11	CARBON	2.2K 5% 1/4W	R94	1-249-417-11	CARBON	1K 5% 1/4W
R31	1-249-417-11	CARBON	1K 5% 1/4W	R95	1-249-433-11	CARBON	22K 5% 1/4W
R32	1-249-433-11	CARBON	22K 5% 1/4W	R96	1-249-425-11	CARBON	4.7K 5% 1/4W
R33	1-249-425-11	CARBON	4.7K 5% 1/4W	R97	1-249-435-11	CARBON	33K 5% 1/4W
R34	1-247-903-00	CARBON	1M 5% 1/4W	R98	1-249-421-11	CARBON	2.2K 5% 1/4W
R35	1-249-429-11	CARBON	10K 5% 1/4W	R99	1-249-417-11	CARBON	1K 5% 1/4W
R36	1-249-429-11	CARBON	10K 5% 1/4W	R100	1-249-433-11	CARBON	22K 5% 1/4W
R37	1-249-429-11	CARBON	10K 5% 1/4W	R101	1-249-425-11	CARBON	4.7K 5% 1/4W
R38	1-215-445-00	METAL	10K 1% 1/4W	R102	1-247-895-00	CARBON	470K 5% 1/4W
R39	1-215-445-00	METAL	10K 1% 1/4W	R103	1-247-895-00	CARBON	470K 5% 1/4W
R40	1-249-429-11	CARBON	10K 5% 1/4W	R104	1-249-429-11	CARBON	10K 5% 1/4W
R42	1-249-441-11	CARBON	100K 5% 1/4W	R105	1-249-429-11	CARBON	10K 5% 1/4W
R43	1-249-405-11	CARBON	100 5% 1/4W	R106	1-215-397-00	METAL	100 1% 1/4W
R44	1-249-417-11	CARBON	1K 5% 1/4W	R107	1-249-393-11	CARBON	10 5% 1/4W
R45	1-215-445-00	METAL	10K 1% 1/4W	R108	1-249-393-11	CARBON	10 5% 1/4W
R46	1-215-445-00	METAL	10K 1% 1/4W	R109	1-249-429-11	CARBON	10K 5% 1/4W
R47	1-249-429-11	CARBON	10K 5% 1/4W	R110	1-215-437-00	METAL	4.7K 1% 1/4W
R48	1-247-895-00	CARBON	470K 5% 1/4W	R111	1-249-421-11	CARBON	2.2K 5% 1/4W
R49	1-215-451-00	METAL	18K 1% 1/4W	R112	1-249-405-11	CARBON	100 5% 1/4W
R50	1-215-451-00	METAL	18K 1% 1/4W	R113	1-249-429-11	CARBON	10K 5% 1/4W
R51	1-249-429-11	CARBON	10K 5% 1/4W	R114	1-215-441-00	METAL	6.8K 1% 1/4W
R52	1-215-451-00	METAL	18K 1% 1/4W	R115	1-215-469-00	METAL	100K 1% 1/4W
R53	1-247-895-00	CARBON	470K 5% 1/4W	R116	1-249-421-11	CARBON	2.2K 5% 1/4W
R54	1-215-451-00	METAL	18K 1% 1/4W	R117	1-249-405-11	CARBON	100 5% 1/4W
R55	1-249-429-11	CARBON	10K 5% 1/4W	R118	1-249-405-11	CARBON	100 5% 1/4W
				R120	1-215-421-00	METAL	1K 1% 1/4W

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R121	1-249-425-11	CARBON	4.7K 5% 1/4W	R193	1-249-417-11	CARBON	1K 5% 1/4W
R122	1-215-461-00	METAL	47K 1% 1/4W	R194	1-249-417-11	CARBON	1K 5% 1/4W
R123	1-215-437-00	METAL	4.7K 1% 1/4W	R195	1-249-429-11	CARBON	10K 5% 1/4W
R124	1-215-437-00	METAL	4.7K 1% 1/4W	R201	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R125	1-215-469-00	METAL	100K 1% 1/4W	R202	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R126	1-249-435-11	CARBON	33K 5% 1/4W	R203	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R128	1-202-731-00	SOLID	10M 5% 1/2W	R204	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R129	1-215-479-00	METAL	270K 1% 1/4W	R205	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R130	1-247-830-11	CARBON	910 5% 1/4W	R206	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R132	1-247-830-11	CARBON	910 5% 1/4W	R207	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R134	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R208	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R135	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R209	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R136	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R210	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
R137	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R211	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R138	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R212	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R139	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R213	1-216-697-11	METAL CHIP	82K 0.50% 1/10W
R140	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R214	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R141	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R215	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R142	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R216	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R143	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R217	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R144	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R218	1-216-697-11	METAL CHIP	82K 0.50% 1/10W
R145	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R219	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R146	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R220	1-216-691-11	METAL CHIP	47K 0.50% 1/10W
R147	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R221	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R148	1-216-683-11	METAL CHIP	22K 0.50% 1/10W	R301	1-249-437-11	CARBON	47K 5% 1/4W
R149	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	<VARIABLE RESISTOR>			
R150	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV1	1-228-459-00	RES, ADJ, CERMET	10K
R151	1-216-697-11	METAL CHIP	82K 0.50% 1/10W	RV2	1-228-459-00	RES, ADJ, CERMET	10K
R152	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV3	1-228-459-00	RES, ADJ, CERMET	10K
R153	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV4	1-228-459-00	RES, ADJ, CERMET	10K
R154	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	RV5	1-228-459-00	RES, ADJ, CERMET	10K
R155	1-216-687-11	METAL CHIP	33K 0.50% 1/10W	RV6	1-228-459-00	RES, ADJ, CERMET	10K
R156	1-216-699-11	METAL CHIP	100K 0.50% 1/10W	RV7	1-228-459-00	RES, ADJ, CERMET	10K
R157	1-216-687-11	METAL CHIP	33K 0.50% 1/10W	RV8	1-228-459-00	RES, ADJ, CERMET	10K
R158	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	RV9	1-228-459-00	RES, ADJ, CERMET	10K
R159	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV10	1-228-459-00	RES, ADJ, CERMET	10K
R160	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV11	1-228-459-00	RES, ADJ, CERMET	10K
R161	1-216-697-11	METAL CHIP	82K 0.50% 1/10W	RV12	1-228-459-00	RES, ADJ, CERMET	10K
R162	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV13	1-228-459-00	RES, ADJ, CERMET	10K
R163	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV14	1-228-459-00	RES, ADJ, CERMET	10K
R164	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	RV15	1-228-459-00	RES, ADJ, CERMET	10K
R165	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	RV16	1-228-459-00	RES, ADJ, CERMET	10K
R168	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	RV17	1-228-459-00	RES, ADJ, CERMET	10K
R169	1-247-903-00	CARBON	1M 5% 1/4W	RV18	1-228-459-00	RES, ADJ, CERMET	10K
R170	1-247-903-00	CARBON	1M 5% 1/4W	RV19	1-228-459-00	RES, ADJ, CERMET	10K
R171	1-249-441-11	CARBON	100K 5% 1/4W	RV20	1-228-459-00	RES, ADJ, CERMET	10K
R172	1-249-429-11	CARBON	10K 5% 1/4W	RV21	1-228-459-00	RES, ADJ, CERMET	10K
R173	1-249-429-11	CARBON	10K 5% 1/4W	RV22	1-228-459-00	RES, ADJ, CERMET	10K
R174	1-249-421-11	CARBON	2.2K 5% 1/4W	RV23	1-228-459-00	RES, ADJ, CERMET	10K
R175	1-249-421-11	CARBON	2.2K 5% 1/4W	RV24	1-228-459-00	RES, ADJ, CERMET	10K
R176	1-249-425-11	CARBON	4.7K 5% 1/4W	RV25	1-228-459-00	RES, ADJ, CERMET	10K
R177	1-249-421-11	CARBON	2.2K 5% 1/4W	RV26	1-228-459-00	RES, ADJ, CERMET	10K
R180	1-249-437-11	CARBON	47K 5% 1/4W	RV27	1-228-459-00	RES, ADJ, CERMET	10K
R182	1-215-453-00	METAL	22K 1% 1/4W	RV28	1-228-459-00	RES, ADJ, CERMET	10K
R183	1-216-699-11	METAL CHIP	100K 0.50% 1/10W	RV29	1-228-459-00	RES, ADJ, CERMET	10K
R184	1-216-699-11	METAL CHIP	100K 0.50% 1/10W	RV30	1-228-459-00	RES, ADJ, CERMET	10K
R185	1-249-417-11	CARBON	1K 5% 1/4W	RV31	1-228-462-00	RES, ADJ, CERMET	100K
R186	1-249-429-11	CARBON	10K 5% 1/4W	RV32	1-228-459-00	RES, ADJ, CERMET	10K
R187	1-249-435-11	CARBON	33K 5% 1/4W	RV33	1-228-459-00	RES, ADJ, CERMET	10K
R188	1-249-429-11	CARBON	10K 5% 1/4W	RV41	1-228-459-00	RES, ADJ, CERMET	10K
R189	1-249-435-11	CARBON	33K 5% 1/4W	RV42	1-228-459-00	RES, ADJ, CERMET	10K
R190	1-249-417-11	CARBON	1K 5% 1/4W				
R191	1-249-423-11	CARBON	3.3K 5% 1/4W				
R192	1-215-453-00	METAL	22K 1% 1/4W				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV43	1-228-459-00	RES, ADJ, CERMET 10K		C40	1-124-120-11	ELECT 220MF	20% 16V
RV44	1-228-459-00	RES, ADJ, CERMET 10K		C41	1-102-244-00	CERAMIC 220PF	10% 500V
RV45	1-228-459-00	RES, ADJ, CERMET 10K		C42	1-102-973-00	CERAMIC 100PF	5% 50V
RV46	1-228-459-00	RES, ADJ, CERMET 10K		<DIODE>			
RV47	1-228-459-00	RES, ADJ, CERMET 10K		D1	8-719-110-31	DIODE RD12ESB2	
RV48	1-228-459-00	RES, ADJ, CERMET 10K		D2	8-719-911-19	DIODE 1SS119	
RV49	1-228-459-00	RES, ADJ, CERMET 10K		D3	8-719-911-19	DIODE 1SS119	
RV50	1-228-459-00	RES, ADJ, CERMET 10K		D4	8-719-911-19	DIODE 1SS119	
RV51	1-228-459-00	RES, ADJ, CERMET 10K		D7	8-719-110-03	DIODE RD7.5ESB2	
RV52	1-228-459-00	RES, ADJ, CERMET 10K		D8	8-719-300-76	DIODE RH-1A	
RV53	1-228-459-00	RES, ADJ, CERMET 10K		D9	8-719-928-08	DIODE ERD28-08S	
RV54	1-228-459-00	RES, ADJ, CERMET 10K		D10	8-719-300-76	DIODE RH-1A	
RV55	1-228-459-00	RES, ADJ, CERMET 10K		D11	8-719-300-76	DIODE RH-1A	
RV56	1-228-459-00	RES, ADJ, CERMET 10K		D12	8-719-300-76	DIODE RH-1A	
RV57	1-228-459-00	RES, ADJ, CERMET 10K		D13	8-719-109-75	DIODE RD4.3ESB2	
RV58	1-228-459-00	RES, ADJ, CERMET 10K		D14	8-719-109-75	DIODE RD4.3ESB2	
RV59	1-228-459-00	RES, ADJ, CERMET 10K		D15	8-719-911-19	DIODE 1SS119	
RV60	1-228-459-00	RES, ADJ, CERMET 10K		D16	8-719-911-19	DIODE 1SS119	
RV61	1-228-462-00	RES, ADJ, CERMET 100K		<CONNECTOR>			
*****				EA1	*1-568-536-11	PLUG (MINIATURE DY) 6P	
*A-1346-028-A	EA BOARD, COMPLETE			<IC>			
	*****			IC1	8-759-100-75	IC UPC1394C	
*4-347-706-00	HEAT SINK (TR)			IC2	8-759-145-58	IC UPC4558C	
*4-373-965-01	INSULATOR (SMALL)			<COIL>			
<CAPACITOR>				L1	1-421-421-00	COIL, CHOKE 100UH	
C1	1-101-810-00	CERAMIC	100PF	L2	1-421-421-00	COIL, CHOKE 100UH	
C2	1-126-966-11	ELECT	33MF	L3	1-249-387-11	CARBON 3.3	5%
C3	1-126-966-11	ELECT	33MF	L4	1-459-111-00	COIL, DRAM CORE (CDI)	1/4W F
C4	1-124-046-00	ELECT	10MF	L5	1-459-111-00	COIL, DRAM CORE (CDI)	
C5	1-124-046-00	ELECT	10MF	<TRANSISTOR>			
C6	1-101-361-00	CERAMIC	150PF	Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C7	1-124-046-00	ELECT	10MF	Q2	8-729-697-92	TRANSISTOR 2SA979-G	
C8	1-136-337-11	FILM	3.3MF	Q3	8-729-140-50	TRANSISTOR 2SC3209LK	
C12	1-102-121-00	CERAMIC	0.0022MF	Q4	8-729-303-61	TRANSISTOR 2SC3851-G	
C13	1-136-165-00	FILM	0.1MF	Q5	8-729-304-07	TRANSISTOR 2SA1488-Y	
C14	1-130-728-00	FILM	0.0022MF	Q10	8-729-119-80	TRANSISTOR 2SC2688-LK	
C15	1-102-973-00	CERAMIC	100PF	Q11	8-729-175-22	TRANSISTOR 2SC2752-L	
C16	1-124-120-11	ELECT	220MF	Q12	8-729-200-17	TRANSISTOR 2SA1091-0	
C17	1-126-233-11	ELECT	22MF	Q13	8-729-119-80	TRANSISTOR 2SC2688-LK	
C18	1-102-973-00	CERAMIC	100PF	Q14	8-729-202-53	TRANSISTOR 2SD1556-LB	
C19	1-126-967-11	ELECT	47MF	Q15	8-729-313-42	TRANSISTOR 2SD1134-C	
C20	1-136-161-00	FILM	0.047MF	Q16	8-729-385-82	TRANSISTOR 2SB858-C	
C21	1-101-810-00	CERAMIC	100PF	<RESISTOR>			
C22	1-108-700-11	MYLAR	0.047MF	R1	1-249-418-11	CARBON 1.2K	5%
C23	1-123-024-21	ELECT	33MF	R2	1-249-425-11	CARBON 4.7K	5%
C24	1-124-046-00	ELECT	10MF	R3	1-249-429-11	CARBON 10K	5%
C25	1-136-612-11	FILM	2.4MF	R4	1-249-429-11	CARBON 10K	5%
C26	1-136-161-00	FILM	0.047MF	R5	1-249-429-11	CARBON 10K	5%
C27	1-108-700-11	MYLAR	0.047MF	R6	1-249-429-11	CARBON 10K	5%
C28	1-124-666-11	ELECT	4.7MF	R7	1-249-421-11	CARBON 2.2K	5%
C29	1-101-810-00	CERAMIC	100PF	R8	1-249-441-11	CARBON 100K	5%
C30	1-162-135-11	CERAMIC	560PF	R9	1-249-429-11	CARBON 10K	5%
C31	1-136-069-00	FILM	0.0044MF	R10	1-216-433-00	METAL OXIDE 1.2K	5%
C32	1-136-069-00	FILM	0.0044MF				
C33	1-124-512-11	ELECT	33MF				
C34	1-124-512-11	ELECT	33MF				
C35	1-126-163-11	ELECT	4.7MF				
C36	1-126-163-11	ELECT	4.7MF				
C37	1-161-051-00	CERAMIC	0.01MF				
C39	1-162-318-11	CERAMIC	0.001MF				

REF.NO.	PART NO.	DESCRIPTION				REMARK	REF.NO.	PART NO.	DESCRIPTION				REMARK
R11	1-216-350-11	METAL OXIDE	1.2	5%	1W	F							
R12	1-216-350-11	METAL OXIDE	1.2	5%	1W	F							
R13	1-249-417-11	CARBON	1K	5%	1/4W		C1	1-124-666-11	ELECT	4.7MF	20%	200V	
R14	1-215-887-00	METAL OXIDE	150	5%	2W	F	C2	1-124-357-11	ELECT	33MF	20%	35V	
R15	1-249-429-11	CARBON	10K	5%	1/4W		C3	1-124-903-11	ELECT	1MF	20%	50V	
							C4	1-124-357-11	ELECT	33MF	20%	35V	
							C6	1-130-789-00	FILM	1MF	5%	100V	
R22	1-249-417-11	CARBON	1K	5%	1/4W								
R23	1-215-445-00	METAL	10K	1%	1/4W		C7	1-106-375-12	MYLAR	0.022MF	10%	200V	
R24	1-215-445-00	METAL	10K	1%	1/4W		C8	1-124-666-11	ELECT	4.7MF	20%	200V	
R25	1-215-431-00	METAL	2.7K	1%	1/4W		C9	1-130-479-00	MYLAR	0.0047MF	5%	50V	
R26	1-215-431-00	METAL	2.7K	1%	1/4W		C10	1-124-122-11	ELECT	100MF	20%	25V	
							C11	1-102-973-00	CERAMIC	100PF	5%	50V	
R27	1-249-435-11	CARBON	33K	5%	1/4W								
R28	1-215-461-00	METAL	47K	1%	1/4W		C12	1-124-122-11	ELECT	100MF	20%	25V	
R29	1-249-429-11	CARBON	10K	5%	1/4W		C13	1-136-161-00	FILM	0.047MF	5%	50V	
R30	1-249-429-11	CARBON	10K	5%	1/4W		C14	1-124-915-11	ELECT	10MF	20%	50V	
R31	1-247-868-11	CARBON	36K	5%	1/4W		C15	1-136-167-00	FILM	0.15MF	5%	50V	
							C16	1-124-046-00	ELECT	10MF		160V	
R32	1-249-429-11	CARBON	10K	5%	1/4W								
R33	1-249-427-11	CARBON	6.8K	5%	1/4W		C17	1-124-808-51	ELECT	10MF	20%	200V	
R34	1-215-433-00	METAL	3.3K	1%	1/4W		C18	1-124-122-11	ELECT	100MF	20%	25V	
R35	1-215-435-00	METAL	3.9K	1%	1/4W		C19	1-124-122-11	ELECT	100MF	20%	25V	
R36	1-249-429-11	CARBON	10K	5%	1/4W		C20	1-162-129-00	CERAMIC	150PF	10%	2KV	
							C21	1-136-173-00	FILM	0.47MF	5%	50V	
R37	1-249-441-11	CARBON	100K	5%	1/4W								
R38	1-249-441-11	CARBON	100K	5%	1/4W		C22	1-102-959-00	CERAMIC	22PF	5%	50V	
R39	1-215-469-00	METAL	100K	1%	1/4W		C23	1-101-880-00	CERAMIC	47PF	5%	50V	
R40	1-249-429-11	CARBON	10K	5%	1/4W								
R41	1-249-429-11	CARBON	10K	5%	1/4W								
R42	1-215-876-00	METAL OXIDE	15K	5%	1W	F							
R43	1-215-859-00	METAL OXIDE	22	5%	1W	F							
R44	1-216-349-00	METAL OXIDE	1	5%	1W	F	D1	8-719-911-19	DIODE	1SS119			
R45	1-249-417-11	CARBON	1K	5%	1/4W		D2	8-719-911-19	DIODE	1SS119			
R46	1-249-417-11	CARBON	1K	5%	1/4W		D3	8-719-911-19	DIODE	1SS119			
							D4	8-719-908-03	DIODE	GP08D			
							D5	8-719-908-03	DIODE	GP08D			
R47	1-216-463-00	METAL OXIDE	12K	5%	2W	F							
R48	1-216-346-00	METAL OXIDE	0.56	5%	1W	F	D6	8-719-911-19	DIODE	1SS119			
R49	1-249-382-11	CARBON	1.2	5%	1/4W	F	D7	8-719-911-19	DIODE	1SS119			
R50	1-247-826-00	CARBON	620	5%	1/4W		D8	8-719-911-19	DIODE	1SS119			
R51	1-247-826-00	CARBON	620	5%	1/4W		D9	8-719-911-19	DIODE	1SS119			
							D10	8-719-911-19	DIODE	1SS119			
R52	1-215-445-00	METAL	10K	1%	1/4W								
R53	1-215-445-00	METAL	10K	1%	1/4W		D21	8-719-911-19	DIODE	1SS119			
R54	1-215-445-00	METAL	10K	1%	1/4W								
R55	1-249-394-11	CARBON	12	5%	1/4W	F							
R56	1-215-445-00	METAL	10K	1%	1/4W								
R57	1-215-445-00	METAL	10K	1%	1/4W		L1	1-459-123-00	COIL, DUST CORE (PAC)				
R58	1-249-405-11	CARBON	100	5%	1/4W								
R59	1-249-419-11	CARBON	1.5K	5%	1/4W								
R60	1-249-419-11	CARBON	1.5K	5%	1/4W								
R61	1-215-907-11	METAL OXIDE	22	5%	3W	F							
R62	1-215-907-11	METAL OXIDE	22	5%	3W	F							
R63	1-216-361-00	METAL OXIDE	0.22	5%	2W	F							
<TRANSFORMER>													
T1	1-460-067-11	HLT											
T2	1-407-850-00	DLT											
T3	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE											
T4	1-437-079-00	TRANSFORMER, HORIZONTAL DRIVE											
T5	1-439-383-11	HOT											

*A-1345-597-A		EB BOARD, COMPLETE											

*4-373-965-01		INSULATOR (SMALL)											
*4-373-966-01		INSULATOR (LARGE)											
<CAPACITOR>													
							Q11	8-729-374-02	TRANSISTOR	2SB740-3			
							Q12	8-729-306-92	TRANSISTOR	2SD669A-C			
							Q13	8-729-306-92	TRANSISTOR	2SD669A-C			
							Q14	8-729-255-12	TRANSISTOR	2SC2551-0			
							Q15	8-729-255-12	TRANSISTOR	2SC2551-0			
							Q16	8-729-255-12	TRANSISTOR	2SC2551-0			
							Q17	8-729-200-17	TRANSISTOR	2SA1091-0			
							Q18	8-729-119-80	TRANSISTOR	2SC2688-LK			
							Q19	8-729-119-80	TRANSISTOR	2SC2688-LK			

EB

GA

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>				Δ .1-570-173-22 SWITCH, VOLTAGE CHANGE			
R1	1-249-429-11	CARBON	10K 5% 1/4W	Δ .1-580-375-11	INLET 3P		
R2	1-249-433-11	CARBON	22K 5% 1/4W	2-990-241-02	HOLDER (A), PLUG		
R3	1-249-425-11	CARBON	4.7K 5% 1/4W	*3-337-402-01	BAND, BINDING		
R4	1-249-430-11	CARBON	12K 5% 1/4W	*4-347-706-00	HEAT SINK (TR)		
R5	1-249-426-11	CARBON	5.6K 5% 1/4W	*4-371-879-02	COVER, AC SELECT		
R6	1-249-429-11	CARBON	10K 5% 1/4W	4-379-403-01	SPACER (G1), POLISHING		
R7	1-216-489-11	METAL OXIDE	27K 5% 3W F	*4-379-408-01	INSULATOR (G3)		
R8	1-247-802-11	CARBON	62 5% 1/4W	*4-379-409-01	NUT, PLATE		
R9	1-249-414-11	CARBON	560 5% 1/4W	4-379-410-01	SPACER (G2), POLISHING		
R10	1-249-382-11	CARBON	1.2 5% 1/4W F	*4-379-430-01	PANEL, POWER		
R11	1-249-382-11	CARBON	1.2 5% 1/4W F	*4-386-847-01	HEAT SINK (S.R.T)		
R12	1-216-351-00	METAL OXIDE	1.5 5% 1W F	*4-386-848-01	BAND (S.R.T)		
R13	1-216-431-11	METAL OXIDE	560 5% 1W F	*4-393-031-01	COVER, FUSE HOLDER		
R14	1-215-866-11	METAL OXIDE	330 5% 1W F	*4-601-466-11	COVER, 3P INLET		
R15	1-249-425-11	CARBON	4.7K 5% 1/4W	<CAPACITOR>			
R16	1-249-423-11	CARBON	3.3K 5% 1/4W F	C1	1-124-024-00	ELECT 4.7MF 20% 350V	
R17	1-247-700-11	CARBON	100 5% 1/4W F	C2	1-124-024-00	ELECT 4.7MF 20% 350V	
R18	1-215-874-11	METAL OXIDE	6.8K 5% 1W F	C3	1-162-117-00	CERAMIC 100PF 10% 500V	
R19	1-249-429-11	CARBON	10K 5% 1/4W	C4	1-162-117-00	CERAMIC 100PF 10% 500V	
R20	1-249-429-11	CARBON	10K 5% 1/4W	C5	1-162-117-00	CERAMIC 100PF 10% 500V	
R21	1-249-425-11	CARBON	4.7K 5% 1/4W	C6	1-162-117-00	CERAMIC 100PF 10% 500V	
R22	1-249-425-11	CARBON	4.7K 5% 1/4W	C7	1-126-104-11	ELECT 470MF 20% 25V	
R23	1-249-425-11	CARBON	4.7K 5% 1/4W	C8	1-126-105-11	ELECT 1000MF 20% 25V	
R24	1-249-417-11	CARBON	1K 5% 1/4W	C9	1-126-104-11	ELECT 470MF 20% 25V	
R25	1-249-417-11	CARBON	1K 5% 1/4W	C10	1-126-105-11	ELECT 1000MF 20% 25V	
R26	1-249-421-11	CARBON	2.2K 5% 1/4W	C11	1-126-104-11	ELECT 470MF 20% 25V	
R27	1-249-421-11	CARBON	2.2K 5% 1/4W	C12	1-124-602-00	ELECT 2200MF 20% 25V	
R28	1-249-405-11	CARBON	100 5% 1/4W	C13	1-126-104-11	ELECT 470MF 20% 25V	
R29	1-249-452-11	CARBON	2.7 5% 1/4W F	C14	1-124-602-00	ELECT 2200MF 20% 25V	
R30	1-249-452-11	CARBON	2.7 5% 1/4W F	C15	1-124-360-00	ELECT 1000MF 20% 16V	
R31	1-249-407-11	CARBON	150 5% 1/4W F	C16	1-126-103-11	ELECT 470MF 20% 16V	
R32	1-216-351-00	METAL OXIDE	1.5 5% 1W F	C17	1-106-375-12	MYLAR 0.022MF 10% 200V	
R33	1-215-421-00	METAL	1K 1% 1/4W	C18	1-108-638-11	MYLAR 0.1MF 10% 100V	
R34	1-215-445-00	METAL	10K 1% 1/4W	C19	1-102-030-00	CERAMIC 330PF 10% 500V	
R35	1-249-423-11	CARBON	3.3K 5% 1/4W	C20	1-162-117-00	CERAMIC 100PF 10% 500V	
R36	1-216-465-11	METAL OXIDE	27K 5% 2W F	C21	1-102-038-00	CERAMIC 0.001MF 500V	
R37	1-249-401-11	CARBON	47 5% 1/4W	C22	1-162-117-00	CERAMIC 100PF 10% 500V	
R38	1-249-425-11	CARBON	4.7K 5% 1/4W	C23	1-106-375-12	MYLAR 0.022MF 10% 100V	
R39	1-215-445-00	METAL	10K 1% 1/4W	C24	1-108-704-11	MYLAR 0.1MF 10% 200V	
R40	1-215-453-00	METAL	22K 1% 1/4W	C25	1-124-903-11	ELECT 1MF 20% 50V	
R41	1-215-421-00	METAL	1K 1% 1/4W	C26	1-101-361-00	CERAMIC 150PF 5% 50V	
R42	1-247-688-11	CARBON	10 5% 1/4W F	C27	1-101-361-00	CERAMIC 150PF 5% 50V	
R43	1-247-688-11	CARBON	10 5% 1/4W F	C28	1-126-964-11	ELECT 10MF 20% 16V	
R44	1-215-865-11	METAL OXIDE	220 5% 1W F	C29	1-126-967-11	ELECT 47MF 20% 25V	
R45	1-247-688-11	CARBON	10 5% 1/4W F	C30	1-162-117-00	CERAMIC 100PF 10% 500V	
R51	1-249-411-11	CARBON	330 5% 1/4W	C31	1-102-030-00	CERAMIC 330PF 10% 500V	
<TRANSFORMER>				C32	1-124-903-11	ELECT 1MF 20% 50V	
T1	1-421-504-00	TRANSFORMER, FERRITE (VPT)		C33	1-101-361-00	CERAMIC 150PF 5% 50V	
T2	1-407-849-00	TRANSFORMER, D.F		C34	1-101-361-00	CERAMIC 150PF 5% 50V	
*****				C35	1-124-903-11	ELECT 1MF 20% 50V	
*A-1316-089-A GA BOARD, COMPLETE (BVM-1311 ONLY)				C36	1-126-967-11	ELECT 47MF 20% 25V	
*****				C37	1-130-734-00	FILM 0.0068MF 5% 50V	
*A-1316-090-A GA BOARD, COMPLETE (BVM-1411P ONLY)				C38	1-136-165-00	FILM 0.1MF 5% 50V	
*****				C39	1-136-165-00	FILM 0.1MF 5% 50V	
(GB BOARD INCLUDING)				C40	1-123-381-00	ELECT 2.2MF 20% 50V	
Δ .1-533-167-21 HOLDER, FUSE				C41	1-102-038-00	CERAMIC 0.001MF 500V	
Δ .1-533-168-21 HOLDER, FUSE				C42	1-136-165-00	FILM 0.1MF 5% 50V	
1-535-316-11 TERMINAL, GROUND (M4)				C43	1-136-165-00	FILM 0.1MF 5% 50V	
				C44	1-126-964-11	ELECT 10MF 20% 16V	
				C45	1-162-132-00	CERAMIC 270PF 10% 2KV	

7. ELECTRICAL PARTS LIST

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Replace only with part number specified.

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GA

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C46	1-126-964-11	ELECT	10MF 20% 16V	D1	8-719-912-51	DIODE ESAC25-04C	
C47	1-136-173-00	FILM	0.47MF 5% 50V	D2	8-719-918-73	DIODE ESAC25-04N	
C48	1-136-173-00	FILM	0.47MF 5% 50V	D3	8-719-901-73	DIODE ESAD25-04D	
C49	1-126-964-11	ELECT	10MF 20% 16V	D4	8-719-901-73	DIODE ESAD25-04D	
C50	1-101-006-00	CERAMIC	0.047MF 50V	D5	8-719-988-31	DIODE D10SC6MR	
C51	1-101-006-00	CERAMIC	0.047MF 50V	D6	8-719-510-09	DIODE D10SC6M	
C52	1-101-006-00	CERAMIC	0.047MF 50V	D7	8-719-300-33	DIODE RU-3AM	
C53	1-101-006-00	CERAMIC	0.047MF 50V	D8	8-719-300-52	DIODE CTU-38R	
C54	1-101-006-00	CERAMIC	0.047MF 50V	D9	8-719-300-53	DIODE CTU-38S	
C55	1-126-964-11	ELECT	10MF 20% 16V	D10	8-719-912-51	DIODE ESAC25-04C	
C56	1-136-201-11	FILM	0.22MF 5% 400V	D11	8-719-918-73	DIODE ESAC25-04N	
C57	1-124-915-11	ELECT	10MF 20% 25V	D12	8-719-911-19	DIODE 1SS119	
C58	1-124-902-00	ELECT	0.47MF 20% 50V	D13	8-719-911-19	DIODE 1SS119	
C59	1-130-734-00	FILM	0.0068MF 5% 50V	D14	8-719-100-58	DIODE RD10EB3	
C60	1-102-228-00	CERAMIC	470PF 10% 500V	D15	8-719-911-19	DIODE 1SS119	
C61	1-102-228-00	CERAMIC	470PF 10% 500V	D16	8-719-911-19	DIODE 1SS119	
C62	1-102-228-00	CERAMIC	470PF 10% 500V	D17	8-719-911-19	DIODE 1SS119	
C63	1-102-228-00	CERAMIC	470PF 10% 500V	D20	8-719-200-02	DIODE 10E-2	
C64	1-124-024-00	ELECT	4.7MF 20% 350V	D21	Δ 8-719-300-07	DIODE RB40GN	
C65	1-124-024-00	ELECT	4.7MF 20% 350V	D22	8-759-157-40	IC UPC574J	
C66	1-162-117-00	CERAMIC	100PF 10% 500V	D23	8-719-911-19	DIODE 1SS119	
C67	1-162-117-00	CERAMIC	100PF 10% 500V	D24	8-719-100-58	DIODE RD10EB3	
C68	1-162-117-00	CERAMIC	100PF 10% 500V	D25	8-719-911-19	DIODE 1SS119	
C69	1-124-562-11	ELECT	47MF 20% 200V	D26	8-719-003-08	THYRISTOR CR3CM-8	
C70	1-124-171-00	ELECT	100MF 20% 160V	D27	8-719-982-04	DIODE ERB81-004	
C71	1-162-117-00	CERAMIC	100PF 10% 500V	D28	8-719-982-04	DIODE ERB81-004	
C72	1-124-562-11	ELECT	47MF 20% 200V	D29	8-719-982-04	DIODE ERB81-004	
C73	1-124-171-00	ELECT	100MF 20% 160V	D30	8-719-982-04	DIODE ERB81-004	
C74	1-124-122-11	ELECT	100MF 20% 16V	D31	8-719-300-33	DIODE RU-3AM	
C75	1-124-122-11	ELECT	100MF 20% 16V	D32	8-719-300-33	DIODE RU-3AM	
C76	Δ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	<CONNECTOR>			
C77	Δ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	GA1	1-506-348-XX	PIN, CONNECTOR 3P	
C78	1-162-599-12	CERAMIC	0.0047MF 20% 400V	GA2	*1-506-371-00	PIN, CONNECTOR 2P	
C79	1-162-599-12	CERAMIC	0.0047MF 20% 400V	GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P	
C80	1-125-658-11	ELECT	560MF 20% 250V	GA4	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
C81	1-125-658-11	ELECT	560MF 20% 250V	GA5	*1-566-055-11	PIN, CONNECTOR 3P	
C82	1-123-369-00	ELECT	4.7MF 20% 25V	GA6	*1-566-055-11	PIN, CONNECTOR 3P	
C83	1-101-004-00	CERAMIC	0.01MF 50V	GA7	*1-566-058-11	PIN, CONNECTOR 6P	
C84	Δ 1-136-311-51	FILM	0.47MF 20% 125V	GA8	*1-566-057-11	PIN, CONNECTOR 5P	
C85	Δ 1-162-578-51	CERAMIC	0.0047MF 20% 400V	<IC>			
C86	Δ 1-162-578-51	CERAMIC	0.0047MF 20% 400V	IC1	1-806-805-11	IC MC5433	
C87	Δ 1-162-578-51	CERAMIC	0.0047MF 20% 400V	IC2	8-759-904-94	IC TL494CN	
C88	Δ 1-162-578-51	CERAMIC	0.0047MF 20% 400V	IC3	8-759-904-94	IC TL494CN	
C89	Δ 1-136-311-51	FILM	0.47MF 20% 125V	IC4	8-759-925-54	IC LM2940CT-5.0	
C90	1-136-171-00	FILM	0.033MF 5% 50V	<COIL>			
C91	1-162-599-12	CERAMIC	0.0047MF 20% 400V (BVM-1411P ONLY)	L3	1-459-643-11	COIL, CHOKE 525UH	
C92	1-136-171-00	FILM	0.033MF 5% 50V	L4	1-459-643-11	COIL, CHOKE 525UH	
C93	1-162-599-12	CERAMIC	0.0047MF 20% 400V (BVM-1411P ONLY)	L5	1-459-643-11	COIL, CHOKE 525UH	
C94	1-102-038-00	CERAMIC	0.001MF 500V	L6	1-459-643-11	COIL, CHOKE 525UH	
C95	1-136-173-00	FILM	0.47MF 5% 50V	L7	1-459-207-00	COIL, CORE	
C96	1-102-050-00	CERAMIC	0.01MF 500V	L8	1-459-644-11	COIL, CHOKE 2.9MMH	
C97	1-136-173-00	FILM	0.47MF 5% 50V	L9	1-459-645-11	COIL, CHOKE 20MMH	
C98	1-136-173-00	FILM	0.47MF 5% 50V	L10	1-421-329-00	COIL, CHOKE	
C99	1-102-050-00	CERAMIC	0.01MF 500V	L11	1-421-329-00	COIL, CHOKE	
C100	1-162-117-00	CERAMIC	100PF 10% 500V	L12	1-421-329-00	COIL, CHOKE	
C101	1-162-117-00	CERAMIC	100PF 10% 500V	L13	1-421-329-00	COIL, CHOKE	
C102	1-136-601-11	FILM	0.01MF 5% 630V	L14	1-421-329-00	COIL, CHOKE	
C103	1-136-601-11	FILM	0.01MF 5% 630V	L15	1-421-329-00	COIL, CHOKE	
C104	1-124-474-11	ELECT	47MF 20% 16V	<DIODE>			

GA

- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
L16	1-421-329-00	COIL, CHOKE		R44	1-215-427-00	METAL	1.8K 1% 1/4W
L17	 1-421-590-11	TRANSFORMER, LINE FILTER		R47	1-216-995-11	METAL	820 1% 10W
L18	 1-421-590-11	TRANSFORMER, LINE FILTER		R48	1-215-866-11	METAL OXIDE	330 5% 1W F
<TRANSISTOR>				R52	 .	METAL OXIDE	2W F
Q1	8-729-301-76	TRANSISTOR STR8124-R		R53	 .	METAL	1/4W
Q2	8-729-301-76	TRANSISTOR STR8124-R		R54	1-215-901-00	METAL OXIDE	33K 5% 2W F
Q3	8-729-140-96	TRANSISTOR 2SD774-34		R55	1-215-426-00	METAL	1.6K 1% 1/4W
Q4	8-729-140-96	TRANSISTOR 2SD774-34		R60	1-249-420-11	CARBON	1.8K 5% 1/4W
Q5	8-729-140-96	TRANSISTOR 2SD774-34		R61	1-249-420-11	CARBON	1.8K 5% 1/4W
Q6	8-729-140-96	TRANSISTOR 2SD774-34		R62	1-249-429-11	CARBON	10K 5% 1/4W
Q7	8-729-140-97	TRANSISTOR 2SB734-34		R64	1-249-426-11	CARBON	5.6K 5% 1/4W
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE		R65	1-215-437-00	METAL	4.7K 1% 1/4W
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R66	1-215-453-00	METAL	22K 1% 1/4W
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		R67	 .	METAL	1/2W
Q12	8-729-140-96	TRANSISTOR 2SD774-34		R68	 .	METAL	1/4W
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		R74	1-215-889-00	METAL OXIDE	330 5% 2W F
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R77	1-215-433-00	METAL	3.3K 1% 1/4W
<RESISTOR>				R78	1-215-433-00	METAL	3.3K 1% 1/4W
R1	1-215-857-11	METAL OXIDE	10 5% 1W F	R80	 1-202-643-35	SOLID	820K 10% 1/2W
R2	1-215-857-11	METAL OXIDE	10 5% 1W F	R81	1-215-461-00	METAL	47K 1% 1/4W
R3	1-247-715-11	CARBON	1.5K 5% 1/4W	R82	1-215-461-00	METAL	47K 1% 1/4W
R4	1-215-857-11	METAL OXIDE	10 5% 1W F	R83	1-215-461-00	METAL	47K 1% 1/4W
R5	1-215-857-11	METAL OXIDE	10 5% 1W F	R84	1-215-459-00	METAL	39K 1% 1/4W
R6	1-249-447-11	CARBON	1 5% 1/4W F	R85	1-215-449-00	METAL	15K 1% 1/4W
R7	1-247-692-11	CARBON	22 5% 1/4W	R86	1-215-437-00	METAL	4.7K 1% 1/4W
R8	1-249-418-11	CARBON	1.2K 5% 1/4W	R87	1-249-405-11	CARBON	100 5% 1/4W
R9	1-249-382-11	CARBON	1.2 5% 1/4W F	R88	1-249-433-11	CARBON	22K 5% 1/4W
R10	1-249-447-11	CARBON	1 5% 1/4W F	R89	1-249-429-11	CARBON	10K 5% 1/4W
R11	1-247-692-11	CARBON	22 5% 1/4W	R90	1-249-429-11	CARBON	10K 5% 1/4W
R12	1-249-418-11	CARBON	1.2K 5% 1/4W	R91	1-249-429-11	CARBON	10K 5% 1/4W
R13	1-215-889-00	METAL OXIDE	330 5% 2W F	R92	 1-217-295-11	WIREWOUND	5.6 10% 5W F
R14	1-247-700-11	CARBON	100 5% 1/4W	R93	1-215-886-11	METAL OXIDE	100 5% 2W F
R15	1-247-709-11	CARBON	510 5% 1/4W	R94	1-205-538-00	WIREWOUND	4.7 10% 10W
R16	1-247-709-11	CARBON	510 5% 1/4W	R95	1-215-904-11	METAL OXIDE	100K 5% 2W F
R17	1-247-700-11	CARBON	100 5% 1/4W	R96	1-215-904-11	METAL OXIDE	100K 5% 2W F
R18	1-249-425-11	CARBON	4.7K 5% 1/4W	R97	1-215-904-11	METAL OXIDE	100K 5% 2W F
R19	1-249-419-11	CARBON	1.5K 5% 1/4W	R98	1-215-904-11	METAL OXIDE	100K 5% 2W F
R20	1-247-838-00	CARBON	2K 5% 1/4W	R100	1-212-889-00	FUSIBLE	220 5% 1/4W F
R21	1-249-417-11	CARBON	1K 5% 1/4W	R101	1-249-470-11	CARBON	0.47 5% 1/2W F
R22	1-249-409-11	CARBON	220 5% 1/4W	R102	1-249-470-11	CARBON	0.47 5% 1/2W F
R23	1-249-417-11	CARBON	1K 5% 1/4W	R103	1-249-470-11	CARBON	0.47 5% 1/2W F
R24	1-249-421-11	CARBON	2.2K 5% 1/4W	R104	1-249-377-11	CARBON	0.47 5% 1/4W F
R25	1-249-409-11	CARBON	220 5% 1/4W	R105	1-249-386-11	CARBON	2.7 5% 1/4W F
R26	1-247-700-11	CARBON	100 5% 1/4W	<VARIABLE RESISTOR>			
R27	1-247-713-11	CARBON	1K 5% 1/4W	RV1	1-237-514-21	RES. ADJ, CERMET 500	
R28	1-247-713-11	CARBON	1K 5% 1/4W	RV2	1-237-515-21	RES. ADJ, CERMET 1K	
R29	1-247-700-11	CARBON	100 5% 1/4W	<RELAY>			
R30	1-215-886-11	METAL OXIDE	100 5% 2W F	RY1	 1-515-805-11	RELAY, POWER	
R31	1-215-886-11	METAL OXIDE	100 5% 2W F	<TRANSFORMER>			
R32	1-215-886-11	METAL OXIDE	100 5% 2W F	T1	 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)	
R33	1-247-697-11	CARBON	56 5% 1/4W F	T2	 1-447-106-11	TRANSFORMER, DRIVE	
R34	1-247-697-11	CARBON	56 5% 1/4W F	T3	 1-421-624-12	TRANSFORMER, CURRENT	
R36	1-249-425-11	CARBON	4.7K 5% 1/4W	T4	 1-447-426-12	TRANSFORMER, CONVERTER	
R37	1-249-420-11	CARBON	1.8K 5% 1/4W	T5	 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)	
R38	1-249-429-11	CARBON	10K 5% 1/4W	T6	 1-447-106-11	TRANSFORMER, DRIVE	
R39	1-249-413-11	CARBON	470 5% 1/4W				
R40	1-215-453-00	METAL	22K 1% 1/4W				
R41	1-249-425-11	CARBON	4.7K 5% 1/4W				
R42	1-215-437-00	METAL	4.7K 1% 1/4W				
R43	1-215-435-00	METAL	3.9K 1% 1/4W				

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

HA

7. ELECTRICAL PARTS LIST

HA HW HH HX HY

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>				*****			
R1	1-247-814-11	CARBON	200 5% 1/4W	*1-647-258-11	HX BOARD	*****	
R2	1-215-469-00	METAL	100K 1% 1/4W				
<VARIABLE RESISTOR>				<SWITCH>			
RV1	1-237-519-21	RES, ADJ, CERMET 20K		S1	1-692-470-11	SWITCH, PUSH (4 KEY)	
<SWITCH>				*****			
S1	1-570-565-11	SWITCH, PUSH (10 KEY)		A-1375-114-A		HY BOARD, COMPLETE	
S2	1-570-565-11	SWITCH, PUSH (10 KEY)		*****			
S3	1-570-565-11	SWITCH, PUSH (10 KEY)		*4-374-937-01	HOLDER, LED	D12-D21,D23-D25,D30-D38 D41-D44,D50,D51,D63-D69	
S4	1-570-565-11	SWITCH, PUSH (10 KEY)					
S5	1-570-565-11	SWITCH, PUSH (10 KEY)		<CAPACITOR>			
S6	1-570-565-11	SWITCH, PUSH (10 KEY)		C1	1-124-584-00	ELECT 100MF	20% 10V
S7	1-570-565-11	SWITCH, PUSH (10 KEY)		C2	1-124-584-00	ELECT 100MF	20% 10V
S8	1-570-565-11	SWITCH, PUSH (10 KEY)		C3	1-124-584-00	ELECT 100MF	20% 10V
S9	1-570-565-11	SWITCH, PUSH (10 KEY)		C4	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S10	1-570-565-11	SWITCH, PUSH (10 KEY)		C5	1-163-031-11	CERAMIC CHIP 0.01MF	50V
*****				C6	1-163-031-11	CERAMIC CHIP 0.01MF	50V
*1-647-257-11		HW BOARD					
		*****		<DIODE>			
		(HH BOARD INCLUDING)		D1	8-719-404-46	DIODE MA110	
*4-391-246-01		SHEET, INSULATING		D2	8-719-404-46	DIODE MA110	
<HOLDER>				D3	8-719-404-46	DIODE MA110	
D1	*4-026-910-00	HOLDER, LED		D4	8-719-404-46	DIODE MA110	
D2	*4-026-910-00	HOLDER, LED		D5	8-719-404-46	DIODE MA110	
<DIODE>				D6	8-719-404-46	DIODE MA110	
D101	8-719-938-68	DIODE GL3HY8		D7	8-719-404-46	DIODE MA110	
D102	8-719-812-41	DIODE TLR124		D8	8-719-404-46	DIODE MA110	
<RESISTOR>				D9	8-719-404-46	DIODE MA110	
R101	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		D10	8-719-404-46	DIODE MA110	
<SWITCH>				D11	8-719-404-46	DIODE MA110	
S101	1-570-566-11	SWITCH, PUSH (4 KEY)		D12	8-719-938-68	DIODE GL3HY8	
*****				D13	8-719-938-68	DIODE GL3HY8	
*1-627-682-11		HH BOARD		D14	8-719-938-68	DIODE GL3HY8	
		*****		D15	8-719-938-68	DIODE GL3HY8	
<CONNECTOR>				D16	8-719-938-68	DIODE GL3HY8	
HH-1	*1-566-614-11	PLUG (L TYPE) 3P		D17	8-719-938-68	DIODE GL3HY8	
HH-2	*1-566-614-11	PLUG (L TYPE) 3P		D18	8-719-938-68	DIODE GL3HY8	
HH-3	*1-566-614-11	PLUG (L TYPE) 3P		D19	8-719-938-68	DIODE GL3HY8	
HH-4	*1-566-614-11	PLUG (L TYPE) 3P		D20	8-719-938-68	DIODE GL3HY8	
<VARIABLE RESISTOR>				D21	8-719-938-68	DIODE GL3HY8	
RV1	1-238-332-11	RES, VAR, CARBON 20K		D23	8-719-938-68	DIODE GL3HY8	
RV2	1-238-332-11	RES, VAR, CARBON 20K		D24	8-719-938-68	DIODE GL3HY8	
RV3	1-238-332-11	RES, VAR, CARBON 20K		D25	8-719-938-68	DIODE GL3HY8	
RV4	1-238-332-11	RES, VAR, CARBON 20K		D26	8-719-404-46	DIODE MA110	
				D27	8-719-404-46	DIODE MA110	
				D28	8-719-404-46	DIODE MA110	
				D29	8-719-404-46	DIODE MA110	
				D30	8-719-938-68	DIODE GL3HY8	
				D31	8-719-938-68	DIODE GL3HY8	
				D32	8-719-938-68	DIODE GL3HY8	
				D33	8-719-938-68	DIODE GL3HY8	
				D34	8-719-938-68	DIODE GL3HY8	
				D35	8-719-938-68	DIODE GL3HY8	
				D36	8-719-938-68	DIODE GL3HY8	
				D37	8-719-938-68	DIODE GL3HY8	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
S9	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C64	1-126-769-21	ELECT CHIP 100MF	20% 14V
S10	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C65	1-126-769-21	ELECT CHIP 100MF	20% 14V
S11	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C66	1-126-769-21	ELECT CHIP 100MF	20% 14V
S12	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C67	1-126-769-21	ELECT CHIP 100MF	20% 14V
S13	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C68	1-126-769-21	ELECT CHIP 100MF	20% 14V
S14	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C69	1-126-769-21	ELECT CHIP 100MF	20% 14V
S15	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C70	1-126-769-21	ELECT CHIP 100MF	20% 14V
S16	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C71	1-126-769-21	ELECT CHIP 100MF	20% 14V
S17	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C81	1-126-769-21	ELECT CHIP 100MF	20% 14V
S19	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C91	1-126-769-21	ELECT CHIP 100MF	20% 14V
S20	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C92	1-126-769-21	ELECT CHIP 100MF	20% 14V
S21	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C102	1-126-769-21	ELECT CHIP 100MF	20% 14V
S22	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C111	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S23	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C112	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S24	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C121	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S25	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C122	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S26	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C123	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S27	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C124	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S28	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C125	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S29	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C126	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S30	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C127	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S31	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C128	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S32	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C129	1-136-161-00	FILM 0.047MF	5% 50V
*****				C141	1-163-031-11	CERAMIC CHIP 0.01MF	50V
A-1375-121-A HZ BOARD, COMPLETE				C142	1-163-031-11	CERAMIC CHIP 0.01MF	50V
*****				C143	1-163-031-11	CERAMIC CHIP 0.01MF	50V
<CAPACITOR>				C144	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C1	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C145	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C2	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C146	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C3	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C147	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C4	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C148	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C5	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C149	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C6	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C150	1-136-161-00	FILM 0.047MF	5% 50V
C7	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C161	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C8	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C162	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C9	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C163	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C10	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C164	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C11	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C165	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C12	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C166	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C13	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V	C167	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C14	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C168	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C15	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C169	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C16	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C170	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C17	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C171	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C18	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C172	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C19	1-124-779-00	ELECT 10MF	20% 16V	C173	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C21	1-126-769-21	ELECT CHIP 100MF	20% 14V	C174	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C22	1-126-769-21	ELECT CHIP 100MF	20% 14V	C175	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C23	1-126-204-11	ELECT 47MF	20% 16V	C176	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C24	1-126-204-11	ELECT 47MF	20% 16V	C177	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C25	1-126-769-21	ELECT CHIP 100MF	20% 14V	C178	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C26	1-126-769-21	ELECT CHIP 100MF	20% 14V	C179	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C41	1-126-769-21	ELECT CHIP 100MF	20% 14V	C180	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C42	1-126-769-21	ELECT CHIP 100MF	20% 14V	C181	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C43	1-126-204-11	ELECT 47MF	20% 16V	C182	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C44	1-126-204-11	ELECT 47MF	20% 16V	C183	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C45	1-126-204-11	ELECT 47MF	20% 16V	C191	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C46	1-126-769-21	ELECT CHIP 100MF	20% 14V	C192	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C47	1-126-769-21	ELECT CHIP 100MF	20% 14V	C201	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C61	1-126-769-21	ELECT CHIP 100MF	20% 14V	C202	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C63	1-126-769-21	ELECT CHIP 100MF	20% 14V	C203	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C204	1-163-031-11	CERAMIC CHIP 0.01MF	50V



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<DIODE>				IC23	8-759-700-78	IC NJM082M	
D1	8-719-109-88	DIODE RD5.6ESB1		IC24	8-759-183-29	IC HD6475368CP-BVM1.10	
D2	8-719-109-88	DIODE RD5.6ESB1		<IC SOCKET>			
D3	8-719-109-88	DIODE RD5.6ESB1		ICS3	1-526-652-21	SOCKET, IC (DP) 8P	
D4	8-719-109-88	DIODE RD5.6ESB1		ICS24	1-540-069-11	SOCKET, IC (IC113) 84P	
D5	8-719-109-88	DIODE RD5.6ESB1		<RESISTOR>			
D6	8-719-109-88	DIODE RD5.6ESB1		JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
D7	8-719-109-88	DIODE RD5.6ESB1		JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
D8	8-719-109-88	DIODE RD5.6ESB1		JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
D9	8-719-109-88	DIODE RD5.6ESB1		JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W	
D10	8-719-109-88	DIODE RD5.6ESB1		JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
D11	8-719-109-88	DIODE RD5.6ESB1		<COIL>			
D12	8-719-109-88	DIODE RD5.6ESB1		L1	1-408-409-00	INDUCTOR 10UH	
D13	8-719-109-88	DIODE RD5.6ESB1		L2	1-408-409-00	INDUCTOR 10UH	
D14	8-719-109-88	DIODE RD5.6ESB1		L3	1-410-210-21	INDUCTOR CHIP 33UH	
D15	8-719-109-88	DIODE RD5.6ESB1		L4	1-408-409-00	INDUCTOR 10UH	
D16	8-719-106-88	DIODE RD15M-B1		<TRANSISTOR>			
D17	8-719-104-34	DIODE 1S2836		Q2	8-729-901-01	TRANSISTOR DTC144EK	
D18	8-719-400-18	DIODE MA152WK		Q3	8-729-901-01	TRANSISTOR DTC144EK	
D19	8-719-400-18	DIODE MA152WK		Q4	8-729-901-01	TRANSISTOR DTC144EK	
D21	8-719-106-23	DIODE RD7.5M-B2		Q5	8-729-901-01	TRANSISTOR DTC144EK	
D22	8-719-106-23	DIODE RD7.5M-B2		Q6	8-729-901-01	TRANSISTOR DTC144EK	
<CONNECTOR>				Q7	8-729-901-01	TRANSISTOR DTC144EK	
HZ1	*1-566-064-11	PIN, CONNECTOR 12P		Q8	8-729-901-01	TRANSISTOR DTC144EK	
HZ2	*1-566-062-11	PIN, CONNECTOR 10P		Q9	8-729-901-01	TRANSISTOR DTC144EK	
HZ3	*1-566-060-11	PIN, CONNECTOR 8P		Q10	8-729-901-01	TRANSISTOR DTC144EK	
HZ4	*1-566-064-11	PIN, CONNECTOR 12P		Q11	8-729-901-01	TRANSISTOR DTC144EK	
HZ5	*1-566-058-11	PIN, CONNECTOR 6P		Q12	8-729-901-01	TRANSISTOR DTC144EK	
HZ6	*1-566-064-11	PIN, CONNECTOR 12P		Q13	8-729-901-01	TRANSISTOR DTC144EK	
HZ7	*1-566-064-11	PIN, CONNECTOR 12P		Q14	8-729-901-01	TRANSISTOR DTC144EK	
HZ8	*1-566-064-11	PIN, CONNECTOR 12P		Q15	8-729-901-01	TRANSISTOR DTC144EK	
HZ9	*1-566-058-11	PIN, CONNECTOR 6P		Q16	8-729-901-01	TRANSISTOR DTC144EK	
HZ10	*1-566-062-11	PIN, CONNECTOR 10P		Q17	8-729-901-01	TRANSISTOR DTC144EK	
HZ11	*1-566-062-11	PIN, CONNECTOR 10P		Q18	8-729-901-01	TRANSISTOR DTC144EK	
HZ12	*1-566-065-11	PIN, CONNECTOR 13P		Q19	8-729-122-63	TRANSISTOR 2SA1226-E4	
<IC>				Q20	8-729-901-01	TRANSISTOR DTC144EK	
IC1	8-759-939-25	IC SN75176BP		Q21	8-729-901-01	TRANSISTOR DTC144EK	
IC2	8-759-939-25	IC SN75176BP		Q22	8-729-901-01	TRANSISTOR DTC144EK	
IC3	8-759-164-54	IC X25040		Q23	8-729-901-01	TRANSISTOR DTC144EK	
IC4	8-759-995-76	IC PST529C		Q24	8-729-901-01	TRANSISTOR DTC144EK	
IC5	8-759-700-78	IC NJM082M		Q25	8-729-901-01	TRANSISTOR DTC144EK	
IC6	8-759-112-72	IC UPD6142G-101		Q26	8-729-901-01	TRANSISTOR DTC144EK	
IC7	8-759-239-88	IC TC74HCT02AF		Q27	8-729-901-01	TRANSISTOR DTC144EK	
IC8	8-759-240-03	IC TC74HCT32AF		Q28	8-729-901-06	TRANSISTOR DTA144EK	
IC9	8-759-233-66	IC TC74HCT04AF		Q29	8-729-901-01	TRANSISTOR DTC144EK	
IC10	8-759-700-78	IC NJM082M		Q30	8-729-122-63	TRANSISTOR 2SA1226-E4	
IC11	8-759-240-65	IC TC74HCT139AF		Q900	8-729-101-11	TRANSISTOR 2SC2351-R2	
IC12	8-759-009-05	IC MC14051BF		Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC13	8-759-938-68	IC CXD1095Q		Q902	8-729-901-01	TRANSISTOR DTC144EK	
IC14	8-759-700-78	IC NJM082M		Q903	8-729-901-01	TRANSISTOR DTC144EK	
IC15	8-759-238-69	IC TC74HC299AF-TP1		<RESISTOR>			
IC16	8-759-009-05	IC MC14051BF		R1	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
IC17	8-759-239-88	IC TC74HCT02AF		R2	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
IC18	8-759-700-78	IC NJM082M		R3	1-249-417-11	CARBON 1K 5% 1/4W	
IC19	8-759-700-78	IC NJM082M		R4	1-216-025-00	METAL GLAZE 100 5% 1/10W	
IC20	8-759-518-73	IC DAC8043GP					
IC21	8-759-518-76	IC REF02EZ					
IC22	8-759-700-78	IC NJM082M					

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R5	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R69	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R6	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R70	1-216-091-00	METAL GLAZE	56K 5% 1/10W
R7	1-249-417-11	CARBON	1K 5% 1/4W	R71	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R8	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R73	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R9	1-249-417-11	CARBON	1K 5% 1/4W	R74	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R10	1-216-620-11	METAL CHIP	51 0.50% 1/10W	R75	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R11	1-216-080-00	METAL GLAZE	20K 5% 1/10W	R76	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R12	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R77	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R13	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R78	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R14	1-249-417-11	CARBON	1K 5% 1/4W	R79	1-216-080-00	METAL GLAZE	20K 5% 1/10W
R15	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R80	1-216-088-00	METAL GLAZE	43K 5% 1/10W
R16	1-249-417-11	CARBON	1K 5% 1/4W	R81	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R17	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R82	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R18	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R83	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R19	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R84	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R20	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R85	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R21	1-249-417-11	CARBON	1K 5% 1/4W	R86	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R22	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R87	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R23	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R88	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R24	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R89	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R25	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R90	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R26	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R91	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R27	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R92	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R28	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R93	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R29	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R94	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R30	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R95	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R31	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R100	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R32	1-216-079-00	METAL GLAZE	18K 5% 1/10W	R101	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R33	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R102	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R34	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R103	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R35	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R104	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R36	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R105	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R37	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R106	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R38	1-249-417-11	CARBON	1K 5% 1/4W	R107	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R39	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R111	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R40	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R112	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R41	1-249-417-11	CARBON	1K 5% 1/4W	R181	1-216-043-00	METAL GLAZE	560 5% 1/10W
R42	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R191	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R43	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R208	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R44	1-249-417-11	CARBON	1K 5% 1/4W	R209	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R45	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<SWITCH>			
R46	1-216-049-00	METAL GLAZE	1K 5% 1/10W	S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R47	1-216-081-00	METAL GLAZE	22K 5% 1/10W	S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R48	1-249-417-11	CARBON	1K 5% 1/4W	<CRYSTAL>			
R49	1-216-073-00	METAL GLAZE	10K 5% 1/10W	X1	1-577-121-11	VIBRATOR, CRYSTAL	
R50	1-249-417-11	CARBON	1K 5% 1/4W	*****			
R51	1-249-417-11	CARBON	1K 5% 1/4W	*A-1345-598-A PA BOARD, COMPLETE			
R52	1-216-073-00	METAL GLAZE	10K 5% 1/10W	*****			
R53	1-249-417-11	CARBON	1K 5% 1/4W	*1-506-108-41 PIN, CONNECTOR (TERMINAL PIN)			
R54	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<CAPACITOR>			
R55	1-216-097-00	METAL GLAZE	100K 5% 1/10W	C101	1-124-046-00	ELECT	10MF 20% 160V
R56	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C102	1-126-967-11	ELECT	47MF 20% 25V
R57	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C103	1-123-024-21	ELECT	33MF 160V
R58	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C104	1-136-171-00	FILM	0.33MF 5% 50V
R59	1-216-097-00	METAL GLAZE	100K 5% 1/10W	C105	1-108-700-11	MYLAR	0.047MF 10% 200V
R60	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R61	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R62	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R63	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R64	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R65	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R67	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R68	1-216-073-00	METAL GLAZE	10K 5% 1/10W				

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- The components identified by Δ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

PA

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C106	1-108-700-11	MYLAR	0.047MF 10% 200V	D219	8-719-911-19	DIODE 1SS119	
C107	1-102-030-00	CERAMIC	330PF 10% 500V	D220	8-719-911-19	DIODE 1SS119	
C108	1-136-072-00	FILM	0.0063MF 3% 2KV	D250	8-719-911-19	DIODE 1SS119	
C109	1-161-753-00	CERAMIC	470PF 10% 3KV	D251	8-719-911-19	DIODE 1SS119	
C110	1-162-114-00	CERAMIC	0.0047MF 2KV				
C111	1-136-601-11	FILM	0.01MF 10% 630V				
C116	1-126-233-11	ELECT	22MF 20% 16V				
C117	1-124-910-11	ELECT	47MF 20% 16V				
C118	1-102-973-00	CERAMIC	100PF 5% 50V				
C119	1-108-796-11	MYLAR	0.0022MF 5% 50V				
C120	1-126-964-11	ELECT	10MF 20% 16V				
C121	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C122	1-136-165-00	FILM	0.1MF 5% 50V				
C123	1-136-169-00	FILM	0.22MF 5% 50V				
C124	1-136-111-00	FILM	1MF 5% 200V				
C125	1-136-169-00	FILM	0.22MF 5% 50V				
C126	1-102-030-00	CERAMIC	330PF 10% 500V				
C127	1-130-736-11	FILM	0.01MF 5% 50V				
C128	1-130-994-11	FILM	0.033MF 5% 50V				
C129	1-123-369-00	ELECT	4.7MF 20% 25V				
C130	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C131	1-136-153-00	FILM	0.01MF 5% 50V				
C201	1-108-634-11	MYLAR	0.047MF 10% 100V				
C202	1-126-964-11	ELECT	10MF 20% 16V				
C203	1-101-006-00	CERAMIC	0.047MF 50V				
C204	1-124-122-11	ELECT	100MF 20% 16V				
C205	1-126-541-11	ELECT	330MF 20% 16V				
C207	1-124-122-11	ELECT	100MF 20% 16V				
C209	1-101-006-00	CERAMIC	0.047MF 50V				
C210	1-123-382-00	ELECT	3.3MF 20% 50V				
C211	1-163-157-00	FILM	0.022MF 5% 50V				
C212	1-101-006-00	CERAMIC	0.047MF 50V				
C213	1-124-915-11	ELECT	10MF 20% 50V				
C214	1-124-915-11	ELECT	10MF 20% 50V				
C215 Δ	1-123-316-51	ELECT	10MF 20% 16V				
C216 Δ	1-102-074-61	CERAMIC	0.001MF 10% 50V				
C217	1-126-964-11	ELECT	10MF 20% 16V				
C218	1-126-541-11	ELECT	330MF 20% 16V				
C219	1-101-004-00	CERAMIC	0.01MF 50V				
C221	1-136-175-00	FILM	0.068MF 5% 50V				
C250	1-126-541-11	ELECT	330MF 20% 16V				
		<DIODE>					
D102	8-719-300-80	DIODE RU-1C					
D103	8-719-300-80	DIODE RU-1C					
D104	8-719-300-80	DIODE RU-1C					
D105	8-719-300-80	DIODE RU-1C					
D106	8-719-901-19	DIODE V11N					
D109	8-719-911-19	DIODE 1SS119					
D110	8-719-911-19	DIODE 1SS119					
D111	8-719-109-63	DIODE RD3.0ESB2					
D201	8-719-911-19	DIODE 1SS119					
D202	8-719-109-72	DIODE RD3.9ESB2					
D203	8-719-911-19	DIODE 1SS119					
D204	8-719-000-28	THYRISTOR CRO2AM-8					
D205	8-719-000-28	THYRISTOR CRO2AM-8					
D206	8-719-911-19	DIODE 1SS119					
D207	8-719-911-19	DIODE 1SS119					
D214	8-719-910-25	DIODE HZ12B2L					
D215 Δ	8-759-107-91	IC UPC574J-TP					
D216 Δ	8-759-107-91	IC UPC574J-TP					
D217	8-719-911-19	DIODE 1SS119					
D218	8-719-911-19	DIODE 1SS119					
		<IC>					
IC1	8-759-100-75	IC UPC1394C					
IC2	8-759-729-03	IC NJM2903D					
IC3	8-759-729-03	IC NJM2903D					
IC4	8-759-503-91	IC TL082ACP					
		<COIL>					
L1	1-459-215-00	COIL (WITH CORE)					
		<CONNECTOR>					
PA1	1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P					
PA2	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P					
		<TRANSISTOR>					
Q101	8-729-105-97	TRANSISTOR 2SA1156-2K					
Q102	8-729-201-62	TRANSISTOR 2SC2555-2					
Q103	8-729-202-53	TRANSISTOR 2SD1556-LB					
Q104	8-729-804-48	TRANSISTOR 2SC3675					
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q107	8-729-119-80	TRANSISTOR 2SC2688-LK					
Q108	8-729-119-80	TRANSISTOR 2SC2688-LK					
Q109	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q110	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q111	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE					
		<RESISTOR>					
R101	1-216-347-11	METAL OXIDE 0.68 5% 1W F					
R102	1-247-887-00	CARBON 220K 5% 1/4W					
R103	1-249-419-11	CARBON 1.5K 5% 1/4W					
R104	1-216-464-11	METAL OXIDE 18K 5% 2W F					
R105	1-216-359-00	METAL OXIDE 6.8 5% 1W F					
R106	1-216-351-00	METAL OXIDE 1.5 5% 1W F					
R108	1-212-998-00	FUSIBLE 470 5% 1/2W F					
R109	1-215-898-11	METAL OXIDE 10K 5% 2W F					
R123	1-215-454-00	METAL 24K 1% 1/4W					
Δ R124 Δ		METAL 1.6W					
R125	1-215-452-00	METAL 20K 1% 1/4W					
Δ R126 Δ		METAL 1.6W					
R127	1-249-434-11	CARBON 27K 5% 1/4W					
R128	1-249-427-11	CARBON 6.8K 5% 1/4W					
R129	1-249-440-11	CARBON 82K 5% 1/4W					
R130	1-249-425-11	CARBON 4.7K 5% 1/4W					
R131	1-249-429-11	CARBON 10K 5% 1/4W					
R132	1-249-428-11	CARBON 8.2K 5% 1/4W					
R133	1-249-417-11	CARBON 1K 5% 1/4W					
R134	1-249-437-11	CARBON 47K 5% 1/4W					
R135	1-249-438-11	CARBON 56K 5% 1/4W					
R136	1-249-423-11	CARBON 3.3K 5% 1/4W					
R137	1-215-461-00	METAL 47K 1% 1/4W					
R138	1-215-440-00	METAL 6.2K 1% 1/4W					
R139	1-249-424-11	CARBON 3.9K 5% 1/4W					

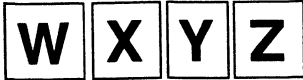
PA PB QA

The components identified by shading and mark **A** are critical for safety.
Replace only with part number specified.

7. ELECTRICAL PARTS LIST

V

7-45



Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-627-678-11	W BOARD *****		3-170-078-01		HOLDER (B), PLUG (BVM-1411P ONLY)	
		<CAPACITOR>		4-039-980-01		MANUAL, OPERATION & MAINTENANCE	
C1	1-108-692-11	MYLAR	0.01MF 10% 200V	4-378-901-01		KEY	
C2	1-108-692-11	MYLAR	0.01MF 10% 200V	4-379-427-01		PLATE, NUMBER, TALLY	
		<RESISTOR>		*4-040-001-01		INDIVIDUAL CARTON (BVM-1411P ONLY)	
R1	1-214-702-00	METAL	75 1% 1/4W	*4-040-002-01		INDIVIDUAL CARTON (BVM-1311 ONLY)	
R2	1-214-702-00	METAL	75 1% 1/4W	4-312-246-00		BAG, PROTECTION	
R3	1-214-702-00	METAL	75 1% 1/4W				
		*****		*4-379-479-01		CUSHION (UPPER)	
	*1-617-892-11	X BOARD *****		*4-379-480-01		CUSHION (LOWER)	
		<DIODE>		*4-379-482-01		SPACER	
D1	8-719-920-21	DIODE LT-9220H		7-700-731-03		DRIVER, VR ADJUSTMENT	

	*1-617-893-11	Y BOARD *****					
		<DIODE>					
D1	8-719-812-43	DIODE TLG124A					

	*A-1394-088-A	Z BOARD, COMPLETE *****					
	*1-561-337-21	CONNECTOR, MULTI					

		MISCELLANEOUS *****					
	1-162-142-21	CAP BLOCK, HIGH VOLTAGE 1400PF					
	1-237-165-13	RESISTOR ASSY, HIGH-VOLTAGE					
	1-426-263-11	COIL, DEMAGNETIZATION					
	1-439-382-21	TRANSFORMER ASSY, FLYBACK (KX-2011)					
	1-451-287-21	DEFLECTION YOKE (Y14FAA)					
	1-452-117-31	CRT NECK ASSY					
	1-452-261-22	CRT NECK ASSY (362)					
	1-453-103-41	HIGH-VOLTAGE BLOCK (HB-203(C))					
	1-565-791-11	CONNECTOR, BNC 1P					
	1-571-877-12	SWITCH, PUSH (AC POWER)					
V901	8-738-051-05	CRT (M34JNR20X) (BVM-1311 ONLY)					
V901	8-738-052-05	CRT (M34JNR21X) (BVM-1411P ONLY)					

		ACCESSORIES & PACKING MATERIALS *****					
	*A-1394-088-A	Z BOARD, COMPLETE					
	1-532-203-11	FUSE, TIME-LAG (2.0A/250V)					
	1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)					
	1-551-812-11	CORD, POWER (7.0A/125V) (BVM-1311 ONLY)					
	1-560-776-00	SOCKET, CONNECTOR 10P					
	1-590-151-11	CORD SET, POWER (10.0A/250V) (BVM-1411P ONLY)					
	2-990-242-01	HOLDER (B), PLUG (BVM-1311 ONLY)					

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SONY[®]

TRINITRON[®] COLOR VIDEO MONITOR

BVM-1311

BVM-1411P

SUPPLEMENT-2

Please replace this supplement-2 with your manual.

INTRODUCTION

When input APL fluctuated signal, the white balance and the luminance will be change unusually.
Change the value of following parts in this case.

SECTION 7 ELECTRICAL PARTS LIST

BK BOARD : See page 7-15

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>				<u>Remark</u>
R118	1-214-964-00	METAL	1M	1%	1/4W	
R119	1-215-471-00	METAL	120K	1%	1/4W	
R218	1-214-964-00	METAL	1M	1%	1/4W	
R219	1-215-471-00	METAL	120K	1%	1/4W	
R318	1-214-964-00	METAL	1M	1%	1/4W	
R319	1-215-471-00	METAL	120K	1%	1/4W	

PA BOARD : See page 7-33

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>				<u>Remark</u>
C111	1-136-557-11	FILM	0.0033MF	10%	630V	



TRINITORN

OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1311)

Serial No. 2000001 and Higher (BVM-1411P)

SONY

BACKUP FILE

TRINITRON® COLOR VIDEO MONITOR

BVM-1311

BVM-1411P

CORRECTION-1

File this Correction with the OPERATION AND MAINTENANCE MANUAL.

Replace incorrect portions in the OPERATION AND MAINTENANCE MANUAL with corresponding portions in this leaflet.



OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1311)

Serial No. 2000001 and Higher (BVM-1411P)

Section 1 Operation

1-1. Overview

1-1-1. Features

The BVM-1311 and BVM-1411P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.

The BVM-1311 is the NTSC model intended for use in NTSC color standard areas and the BVM-1411P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.

The other features and operations are the same.

High-resolution picture

The Super Fine Pitch Trinitron picture tube (0.25-mm aperture grille pitch) gives a high-resolution, high-contrast picture. Horizontal resolution is more than 700 TV lines at the center of the picture.

Stabilized color temperature

The incorporated beam control circuit maintains the color temperature constant for a long period of time.

Picture aspect selection

In addition to the conventional 4:3 aspect, the 16:9 aspect can be selected for monitoring the increasing number of wide-screen programs.

Split screen for precise picture confirmation

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

Blue-only mode for precise evaluation of noise components

In blue-only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

Easy and precise convergence adjustment

The convergence can be adjusted at 15 points (for 4:3-aspect pictures) of the screen. This system facilitates adjustment of the peripheral areas of the screen.

Section 1 Operation

Easy-to-use menu operations

The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.

Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-2056 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- Drawers containing convergence, white balance and menu controls and other function selectors
- High-performance comb filters available for the BVM-1311 as built-in standard. (For the BVM-1411P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting, using the optional BKM-1400 rack mount kit

1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the BVM-1311/1411P.

Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

BKM-1400 rack mount kit

For mounting in an EIA standard 19-inch rack

BKM-1410 NTSC adaptor (BC board) [built-in standard for the BVM-1311]

Decoder board for the NTSC color system

BKM-1412 NTSC comb adaptor (BT board) [built-in standard for the BVM-1311]

Dynamic comb filter board for the NTSC color system

BKM-1420 PAL adaptor (BD board) [built-in standard for the BVM-1411P]

Decoder board for the PAL color system

BKM-1421 PAL-M adaptor (BM board)

Decoder board for the PAL-M color system

BKM-1422 PAL comb adaptor (BT board)

Comb filter board for the PAL color system

BKM-1430 SECAM adaptor (BE board)

Decoder board for the SECAM color system

BKM-1440 RGB/component adaptor (BF board)

Decoder outputs of RGB or component signals

BKM-1460 VITC adaptor (BL board)

Reader of Vertical Interval Time Code

BKM-1470 safe area display (BQ board)

For displaying the safe area

BKM-1480 black level signal generator (BS board)

For generating black level signals

BKM-2053 auto set-up probe

For auto set-up operation with the BKM-2056 auto set-up adaptor.

BKM-2056 auto set-up adaptor (BN, BO and BP boards)

For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

BKM-2085-14 digital 4:2:2 serial input kit (BA3 and BV boards)

For two serial inputs of component digital video signals

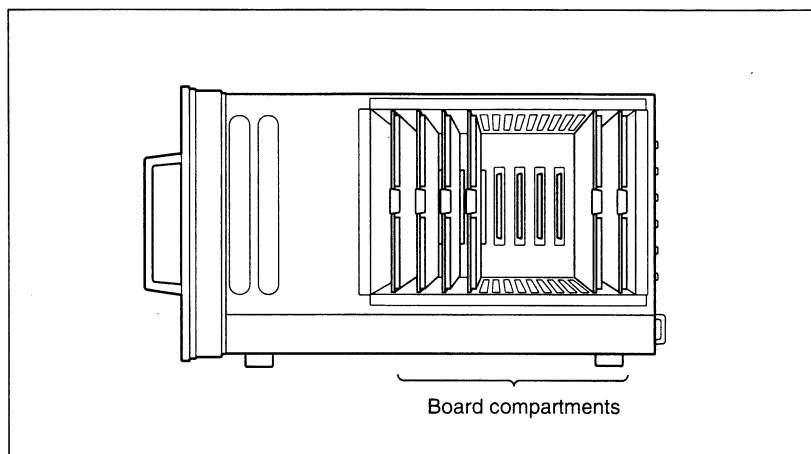
BKM-2090-14 D-2 serial input kit (BA3 and BU boards)

For two serial inputs of a digital composite video signal

Section 1 Operation

Combination of the optional boards

The BVM-1311/1411P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-1311 comes from the factory with the BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B4 and B5.

The BVM-1411P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.

Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page.

Add the desired boards or replace the supplied BT, BC or BD board with optional boards, referring to the table on the next page.

Notes

- The compartments other than B1 through B5 are reserved for the supplied BA, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

Board assignment

Board name	Function	Compartment name				
		B5	B4	B3	B2	B1
BT (BKM-1412)	NTSC comb filter	○	○	○	○	○
BT (BKM-1422)	PAL comb filter	○	○	○	○	○
BC (BKM-1410)	NTSC decoder	○	○	○	○	○
BD (BKM-1420)	PAL decoder	○	○	○	○	○
BE (BKM-1430)	SECAM decoder	○	○	○	○	○
BM (BKM-1421)	PAL-M decoder	○	○	○	○	○
BF (BKM-1440)	RGB/component adaptor	X	X	○	X	X
BL (BKM-1460)	VITC reader	X	X	X	○	X
BQ (BKM-1470)	Safe area display	X	△	X	○	X
BS (BKM-1480)	Black level signal generator	○	○	○	○	○
BN, BO, BP (BKM-2056)	Auto set-up adaptor	○	○	X	X	X
BV, BA3 (BKM-2085-14)	Digital 4:2:2 serial interface	X	X	X	X	○
BU, BA3 (BKM-2090-14)	D-2 serial interface	X	X	X	X	○

○ : acceptable

× : not acceptable

△ : acceptable but the switch or control settings on the subcontrol panels cannot control the display.

Notes

- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- Do not use the BB (NTSC comb filter) and the BT (NTSC comb filter) boards simultaneously. This causes malfunctions of the monitor.

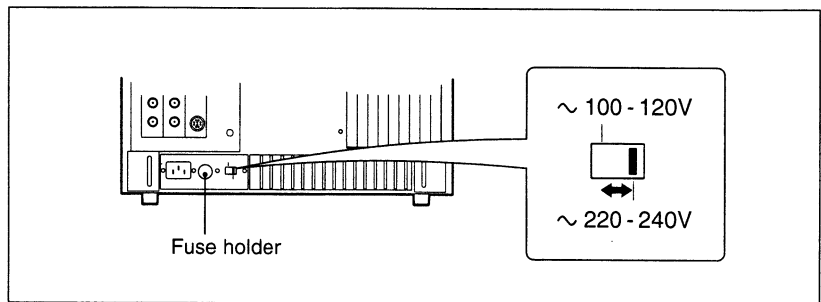
For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.

Section 1 Operation

1-2. Voltage Selection

The BVM-1311 operates on 100-120 V AC and the BVM-1411P operates on 220-240 V AC.

Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.



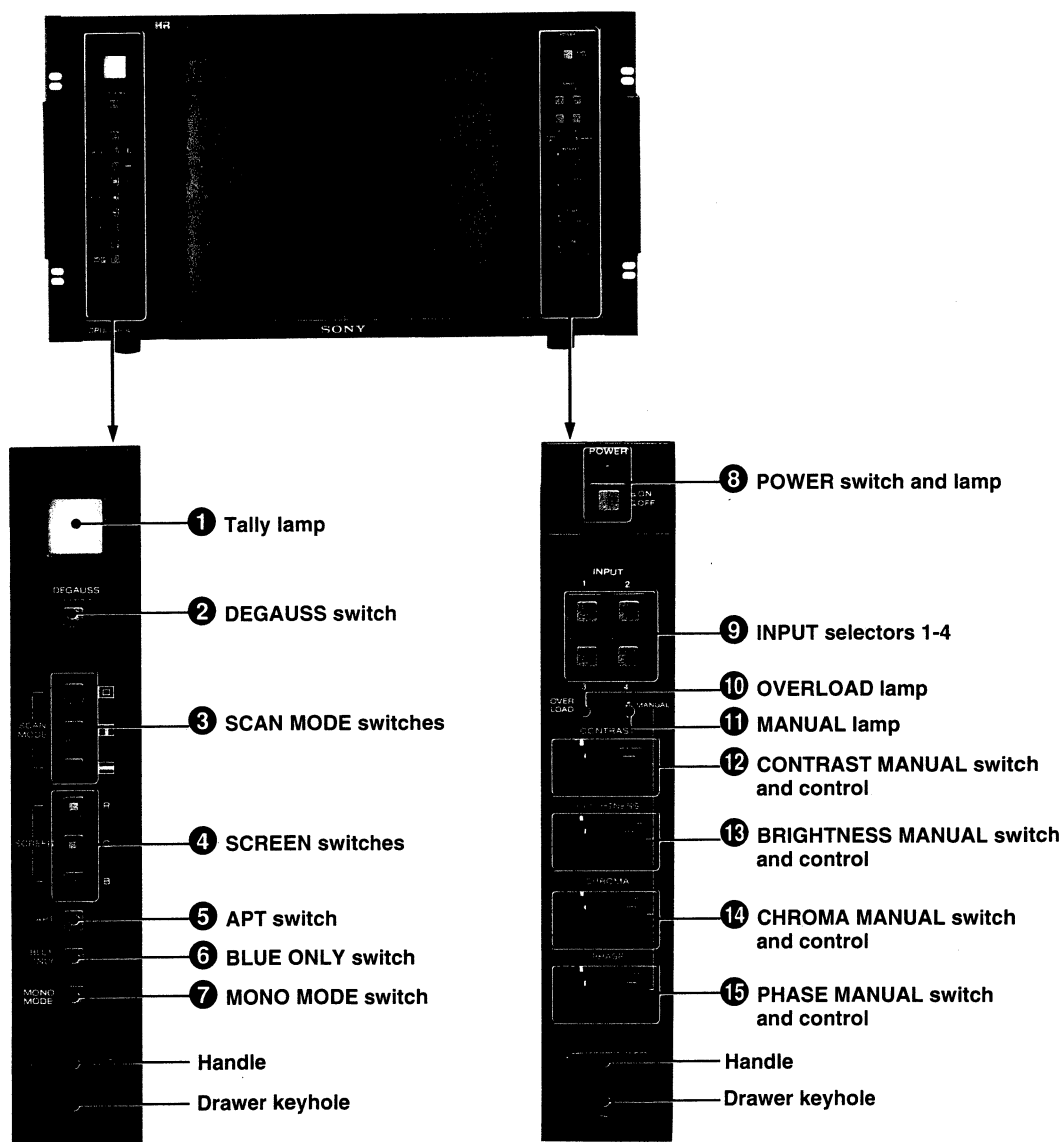
Voltage selector

Note

Use a 4A/125 V fuse for the BVM-1311 (100-120 VAC) and a T2A/250V fuse for the BVM-1411P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

1-3. Location and Function of Parts

1-3-1. Front Panel



The photo shows the BVM-1311. The parts configuration is common to the BVM-1411P.

Front panel

Section 1 Operation

① Tally lamp

Lights when pin No. 3 and No. 8 of the REMOTE connector on the rear panel are short-circuited. Insert one of the supplied tally number plates (1 to 5) when the left drawer is open.

② DEGAUSS switch

When the power is turned on, automatic degaussing is activated. To demagnetize the screen manually, press this switch momentarily with the power on. When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

③ SCAN MODE switches

 **(underscan):** Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

 **(horizontal delay):** Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

 **(vertical delay):** Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the  and  switches.
- To resume normal scanning, press to release the depressed switches.

④ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

⑤ APT (aperture) switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APERTURE control inside the left drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the internal BG board.

With the S1 switch set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

With the S1 switch set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

⑥ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

⑦ MONO MODE switch

Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.

Depress the switch to display color pictures in monochrome (MONO mode).

⑧ POWER switch and lamp

Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

⑨ INPUT selectors 1 - 4

Select the input signal to be monitored by pressing one of these buttons.

The requirements of the input signals can be set with the CONFIGURATION buttons in the right drawer and can be assigned independently to the selectors and stored in memory through the INPUT CONFIG menu operation.

See "1-4-2. Setting the Input Configuration."

10 OVERLOAD lamp

Lights to warn of overloading of the CRT.

11 MANUAL lamp

Lights when any of the four MANUAL switches 12 through 15 is depressed.

12 CONTRAST MANUAL switch and control

When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.

To adjust the contrast manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

13 BRIGHTNESS MANUAL switch and control

When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.

To adjust the brightness manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

14 CHROMA MANUAL switch and control

When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.

To adjust the color saturation manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

15 PHASE MANUAL switch and control

When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.

To adjust the subcarrier phase manually, depress the switch and turn the control.

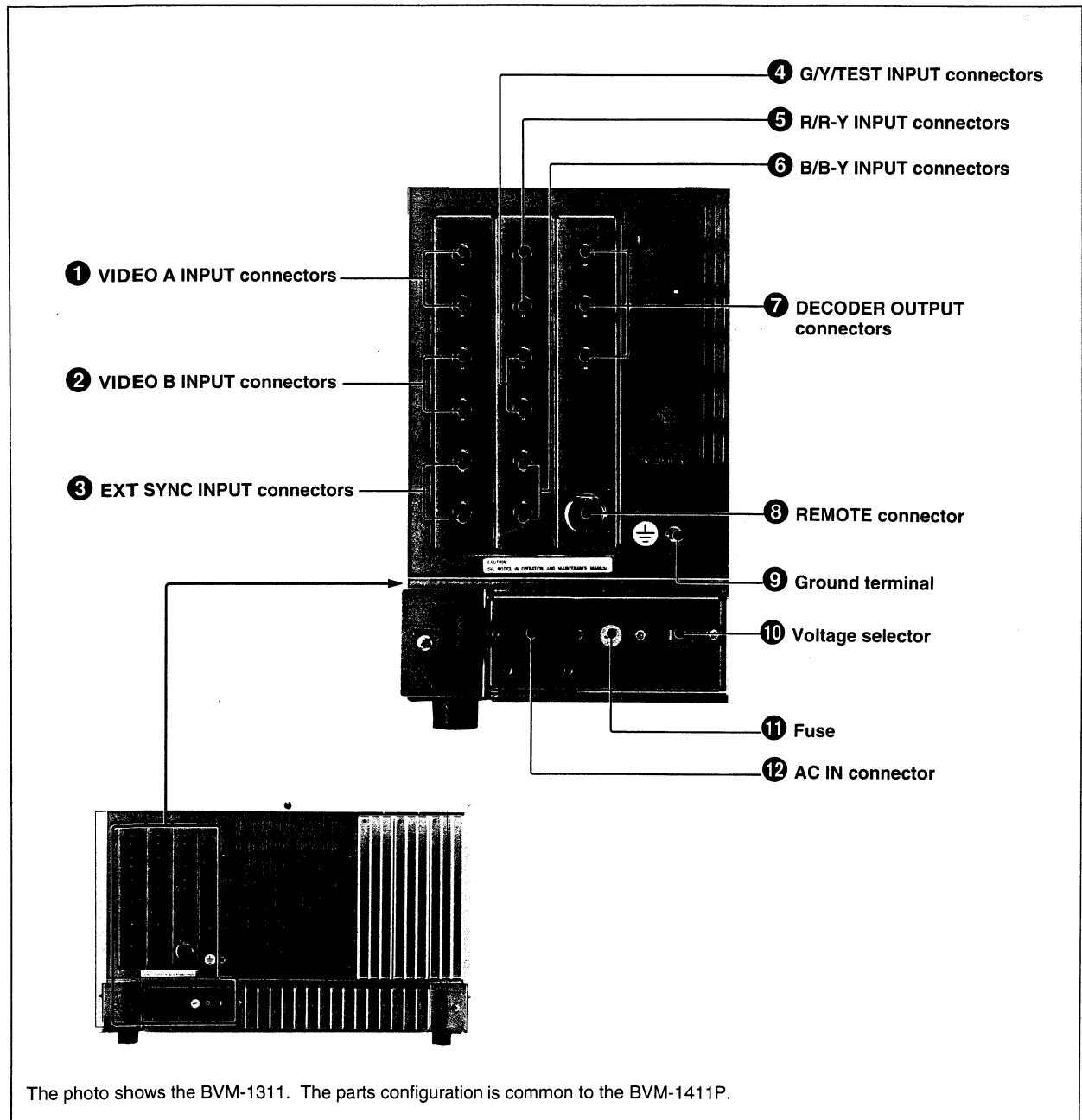
See "1-4-3. Presetting the Picture Levels."

Note

The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the right drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

Section 1 Operation

1-3-2. Rear Panel



Rear panel

① VIDEO A INPUT connectors (BNC)

② VIDEO B INPUT connectors (BNC)

Input composite video signals.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

③ EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

④ G/Y/TEST INPUT connectors (BNC)**⑤ R/R-Y INPUT connectors (BNC)****⑥ B/B-Y INPUT connectors (BNC)**

Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the right drawer.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

⑦ DECODER OUTPUT connectors (BNC)

Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

To provide RGB output, set the S1 selector to the upper position.

To provide component output, set it to the lower position.

Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX button.
- The color killer circuit is not activated for output signals.

⑧ REMOTE connector

Connect to an external control device using the supplied 10-pin connector.

To enter remote control mode, press the LOCAL/REMOTE button in the right drawer so that the associated lamp lights.

The input mode and the pin assignment can be set through the REMOTE menu operation.

See "1-4-6. Assigning the Remote Control Functions."

⑨ Ground terminal

Connect to the system ground, when required.

⑩ Voltage selector

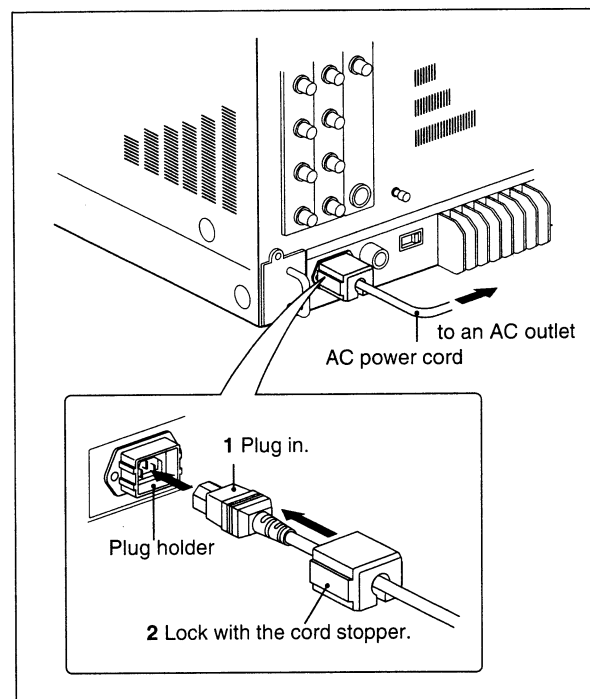
Set to 100-120 V AC for the BVM-1311 or 220-240 V AC for the BVM-1411P.

⑪ Fuse

Use a 4A fuse for the BVM-1311 or a T2A fuse for the BVM-1411P.

⑫ AC IN connector

Connect the supplied AC power cord here and secure it with the supplied cord stopper.

**NOTICE**

THIS NOTICE IS APPLICABLE FOR THE USA ONLY.

If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

DO NOT USE ANY OTHER POWER CORD.

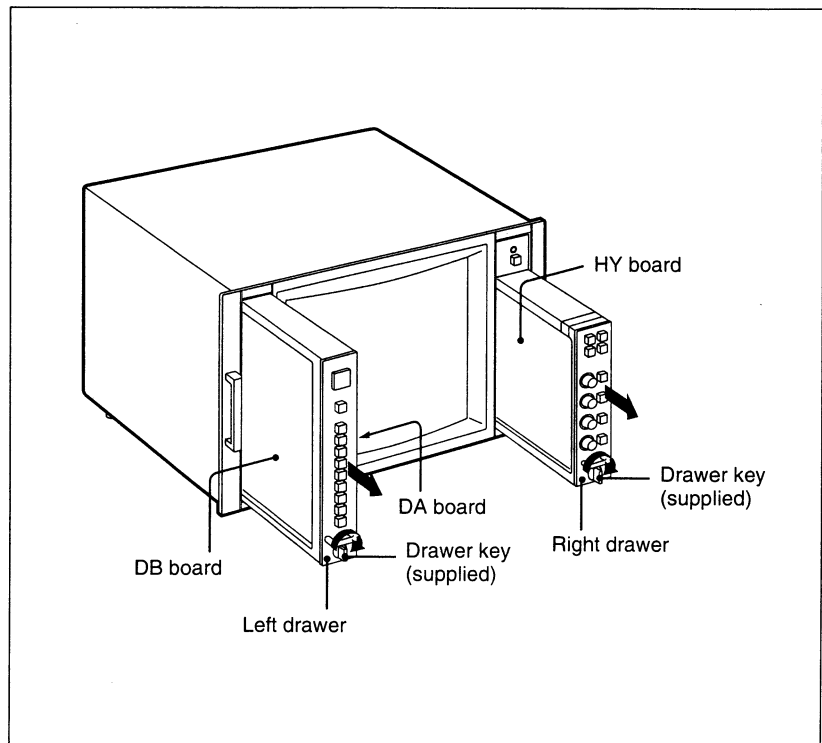
Plug cap	Tandem blade with ground pin
Cord	Type SJT, three 16 or 18 AWG Wires
Length	Maximum 15 feet
Rating	Minimum 10 A, 250 V AC

Section 1 Operation

1-3-3. Subcontrol Panels inside the Drawers

Insert the supplied drawer key into the keyholes of the drawer lock, turn it 90° clockwise and pull the drawer out.

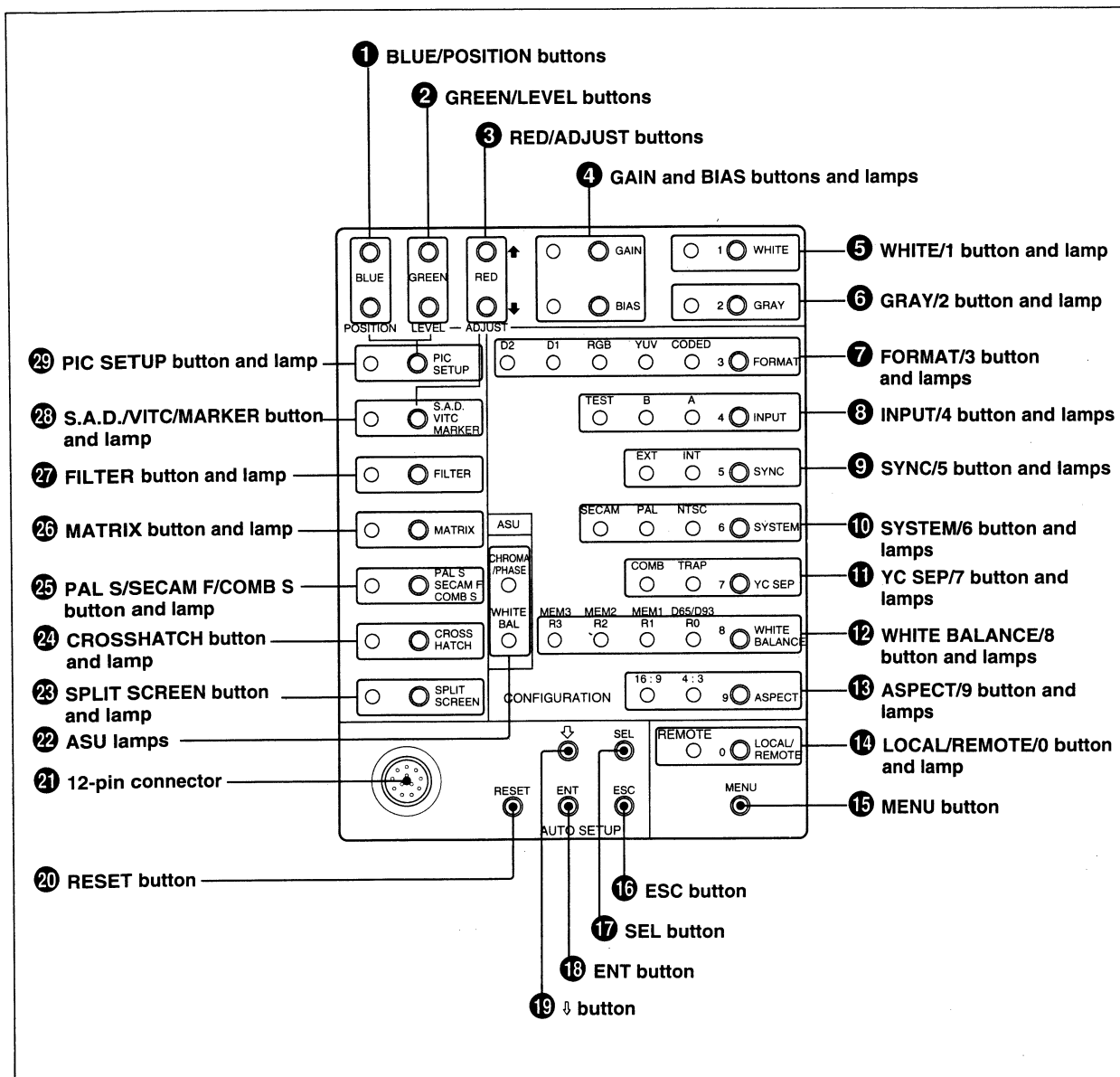
Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



Subcontrol panels

When turning the controls on the DA and DB boards, use the supplied screwdriver.

HY board (input configuration, menu and auto setup operation section)



HY board

1 BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

2 GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

Section 1 Operation

③ RED/ADJUST buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these button to adjust the red signal.

When the safe area is displayed (the S.A.D./VITC/MARKER lamp is lit), use them to adjust the safe area size.

④ GAIN and BIAS buttons and lamps

When adjusting the white balance, select the adjustment items.

BIAS: Adjust the white balance at the lowlight and brightness of the screen.

GAIN: Adjust the white balance at the highlight and contrast of the screen.

For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

⑤ WHITE/1 button¹⁾ and lamp

When adjusting the white balance at the highlight, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

⑥ GRAY/2 button¹⁾ and lamp

When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

⑦ FORMAT/3 button¹⁾ and lamps

Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.

CODED: For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.

YUV: For monitoring Y/R-Y/B-Y component signals.

RGB: For monitoring RGB signals.

D-1: For monitoring D-1 format component signals.

D-2: For monitoring a D-2 format composite signal.

⑧ INPUT/4 button¹⁾ and lamps

When monitoring a composite signal, select the input connector.

Press this button so that the lamp of the appropriate connector lights.

A: For monitoring the signal connected to the VIDEO A INPUT connector.

B: For monitoring the signal connected to the VIDEO B INPUT connector.

TEST: For monitoring the test signal connected to the G/Y/TEST connector.

⑨ SYNC/5 button¹⁾ and lamp

Select the sync mode. Press this button so that the lamp of the appropriate mode lights.

INT (internal sync mode): The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.

EXT (external sync mode): The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

⑩ SYSTEM/6 button¹⁾ and lamps

When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.

NTSC: For monitoring a signal of the NTSC color system.

PAL: For monitoring a signal of the PAL color system.

SECAM: For monitoring a signal of the SECAM color system.

Note

If the decoder board for the selected color system has not been installed:

- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

11 YC SEP(Y/C separation filter)/7 button¹⁾ and lamps

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

COMB: To use the comb filter with the comb filter board (BB or BT) installed.

TRAP: To use the built-in trap filter.

Note

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

12 WHITE BALANCE/8 button¹⁾ and lamps

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights. At the factory, the white balance for D65 has been stored in all the registers.

D65/D93 R0: To use the white balance and picture levels stored in register 0.

MEM 1 R1: To use the white balance and picture levels stored in register 1.

MEM 2 R2: To use the white balance and picture levels stored in register 2.

MEM 3 R3: To use the white balance and picture levels stored in register 3.

For details, see "1-4. Menu Operations."

13 ASPECT/9 button¹⁾ and lamps

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

4:3: For the 4:3 aspect

16:9: For the 16:9 aspect.

14 LOCAL/REMOTE/0 button¹⁾ and lamp

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."

15 MENU button

Press to initiate menu operations. The initial menu is displayed.

16 ESC (escape) button

Press to quit menu or auto setup operations.

17 SEL (select) button

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

For details, refer to the operation and maintenance manual of the BKM-2056 auto set-up adaptor.

18 ENT (enter) button

Press to proceed to the next step during menu or auto setup operation and save the data.

19 ↓ (cursor) button

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

20 RESET button

Press to reset an auto setup operation.

21 12-pin connector

For the optional BKM-2053 auto set-up probe.

22 ASU (automatic setup) lamps

CHROMA/PHASE: Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu in auto setup operations.

WHITE BAL: Lights when one of the color temperature to be transferred to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

23 SPLIT SCREEN button and lamp

To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

24 CROSSHATCH button and lamp

To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.

The crosshatch pattern is synchronized with the selected composite sync signal.

To turn off the pattern, press the button again.

25 PAL S/SECAM F/COMB S button and lamp

While monitoring a PAL signal, the demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected. By pressing the button to turn off the lamp, D (deluxe) mode is selected.

While monitoring a SECAM signal, the ID signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.

When the BKM-1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected.

(When the BKM-1411 NTSC comb filter is activated, the S (simple) comb filter is always selected regardless of the button setting.)

26 MATRIX button and lamp

Should normally be OFF (lamp not lit).

By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors.

To turn off the matrix circuit, press the button again.

27 FILTER button and lamp

To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights.

To deactivate the filter for a wider frequency range, press the button again.

Note

In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

28 S.A.D. (safe area display)/VITC/MARKER button and lamp

When the safe area is displayed with the BQ board (BKM-1470 safe area display) installed, the adjustment of the safe area size can be enabled.

When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

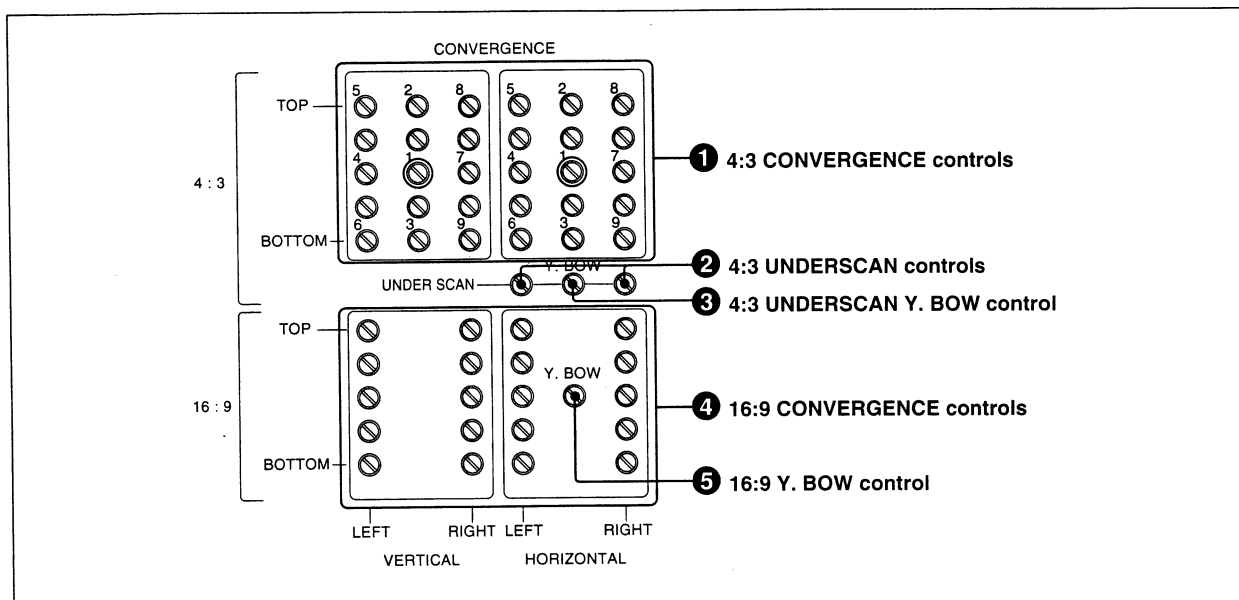
29 PIC SETUP (picture setup) button and lamp

Use to match the black reference of the monitor with the black level of the input signal to be monitored.

By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.

See "1-6-2. Black Level Adjustment."

DB board (Convergence adjustment section)



DB board

❶ 4:3 CONVERGENCE controls

Adjust the convergence of the 4:3-aspect normal picture. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally. Fifteen controls cover the entire screen so that each control adjusts the corresponding portion of the screen.

See "1-5. Convergence Adjustments."

❷ 4:3 UNDERSCAN controls

Adjust the horizontal convergence of the 4:3-aspect underscanned picture.

See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

❸ 4:3 UNDERSCAN Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 4:3-aspect underscanned picture.

See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

❹ 16:9 CONVERGENCE controls

Adjust the convergence of the 16:9-aspect picture at the right and left portions of the screen after adjusting it at the center of the picture using the 4:3 CONVERGENCE controls.

The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally.

See "1-5-3. Convergence of a 16:9-Aspect Picture."

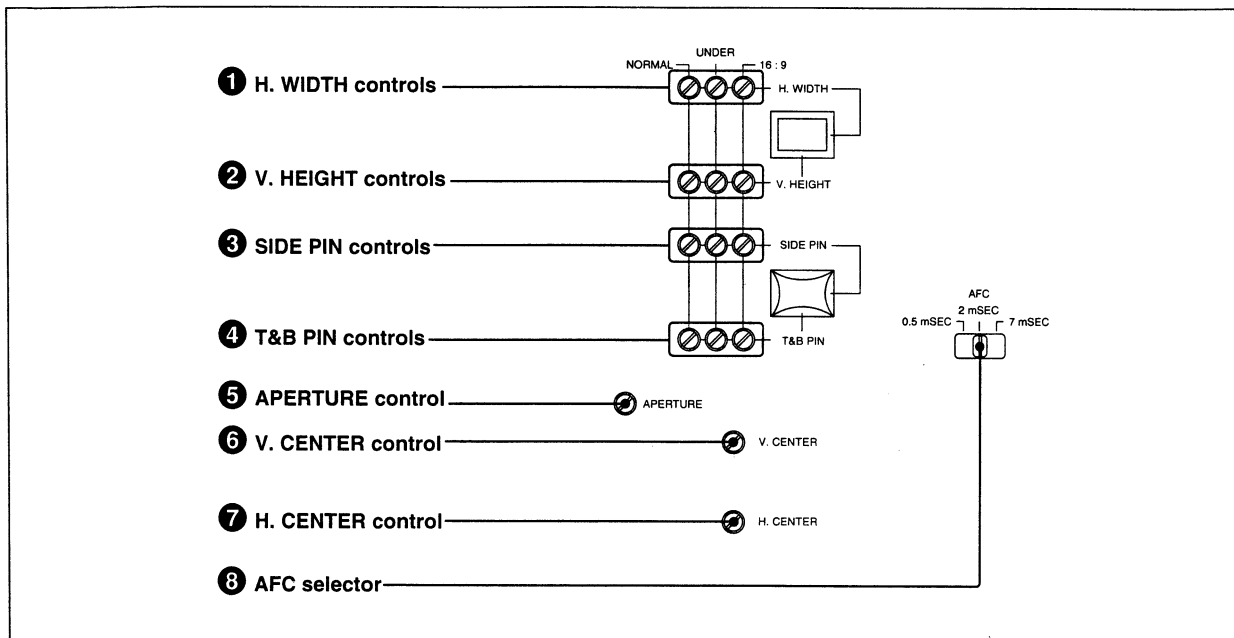
❺ 16:9 Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 16:9-aspect picture.

See "1-5-3. Convergence of a 16:9-Aspect Picture."

Section 1 Operation

DA board (H.V. oscillator section)



DA board

1 H. WIDTH (horizontal width) controls

Adjust the horizontal width of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

2 V. HEIGHT (vertical height) controls

Adjust the height of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

3 SIDE PIN (pincushion) controls

Correct the side pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

4 T&B PIN (top and bottom pincushion) distortion controls

Correct the top and bottom pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

5 APERTURE control

Adjust the frequency response when the APERTURE switch on the front panel is depressed.

6 V. CENTER (vertical centering) control

Adjust the vertical position of the picture.

7 H. CENTER (horizontal centering) control

Adjust the horizontal position of the picture.

8 AFC (automatic frequency control) selector

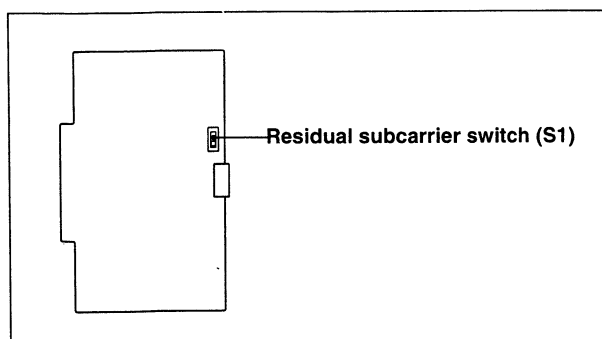
Select the AFC time constant.

- 0.5 mSEC (fast):** This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.
- 2 mSEC (normal):** Normally set to this position.
- 7 mSEC (slow):** This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.

1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside cabinet, see Section 2.

BJ board



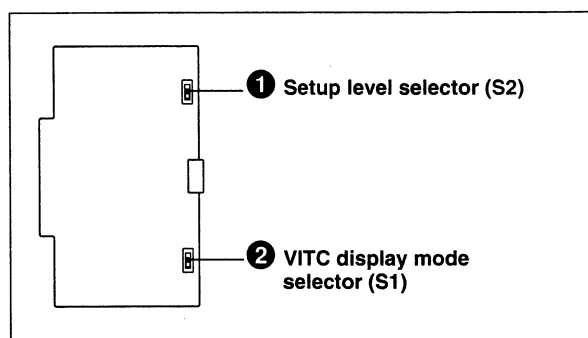
BJ board

Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

BH board



BH board

1 Setup level selector (S2)

Select the setup level.

0 IRE: The setup level is 0%.

AUTO: The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.

See "1-4-7. Defining the Monitor Configuration."

7.5 IRE: The setup level is 7.5%.

The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from -2.5% through +12.5%.

2 VITC display mode selector (S1)

Use to invert the character and background colors for VITC display.

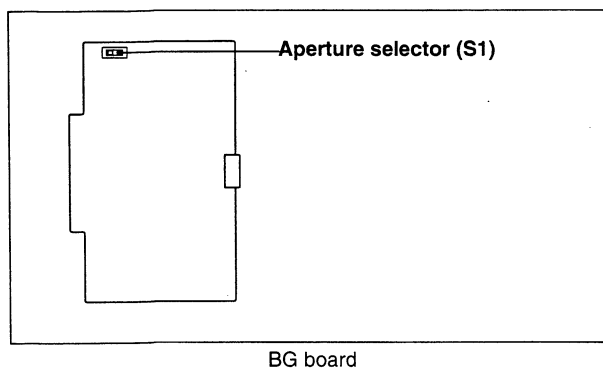
Upper position: Factory-preset position. The VITC is displayed in white characters on a black background.

Lower position: The VITC is displayed in black characters on a white background.

For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.

Section 1 Operation

BG board

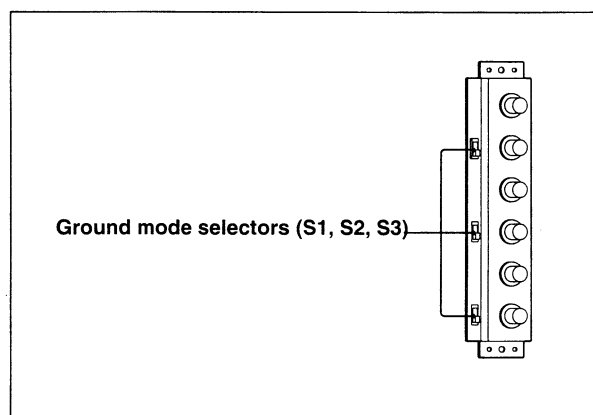


Aperture selector (S1)

Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

Ground mode selectors (S1, S2, S3)

The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

S (nonfloating): Factory-preset position.

Normally keep the selectors at this position.

F (floating): When there is hum in the input signal to be monitored, set to this position.

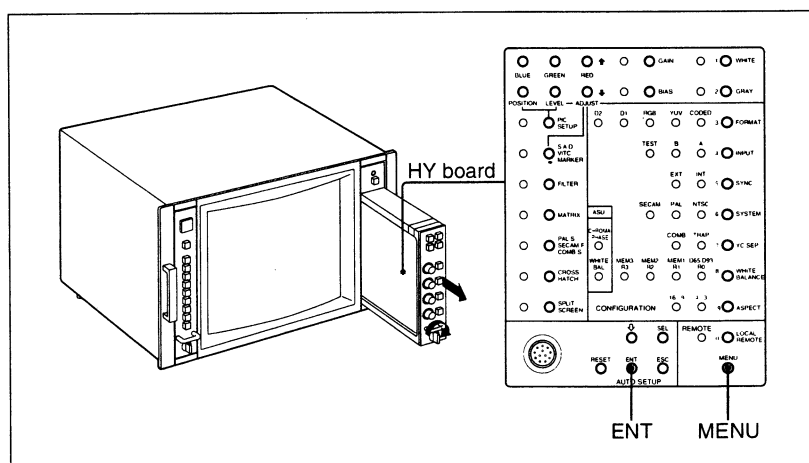
Common mode noise will be rejected.

1-4. Menu Operations

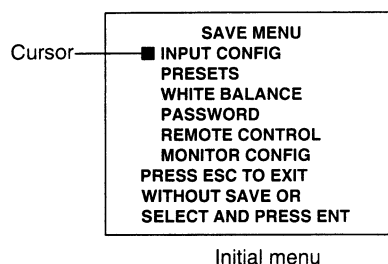
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

1-4-1. Starting with the menu operations

For the menu operations, use the buttons on the HY board in the right drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



Initial menu

INPUT CONFIG (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.

PRESETS: To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.

WHITE BALANCE: To adjust the white balance.

PASSWORD: To specify and activate/deactivate the password.

REMOTE CONTROL: To assign the remote control functions.

MONITOR CONFIG (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

Section 1 Operation

To select a menu option

Move the cursor with the $\downarrow$ button to the line of the desired menu option and press the ENT button.

Pressing the $\downarrow$ button moves the cursor downward and, if at the bottom, to the top.

To cancel the menu operation on the way

Press the ESC button.

At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

Factory-set configuration

Signal	INPUT selectors			
	1	2	3	4
FORMAT	CODED	CODED	COMPONENT	RGB
INPUT	A	B	—	—
SYNC	INT	INT	INT	INT
SYSTEM ^{a)}	NTSC/PAL	NTSC/PAL	—	—
ASPECT	4 : 3	4 : 3	4 : 3	4 : 3
YC SEP ^{b)}	COMB	COMB	—	—

a) NTSC for the BVM-1311 and PAL for the BVM-1411P.

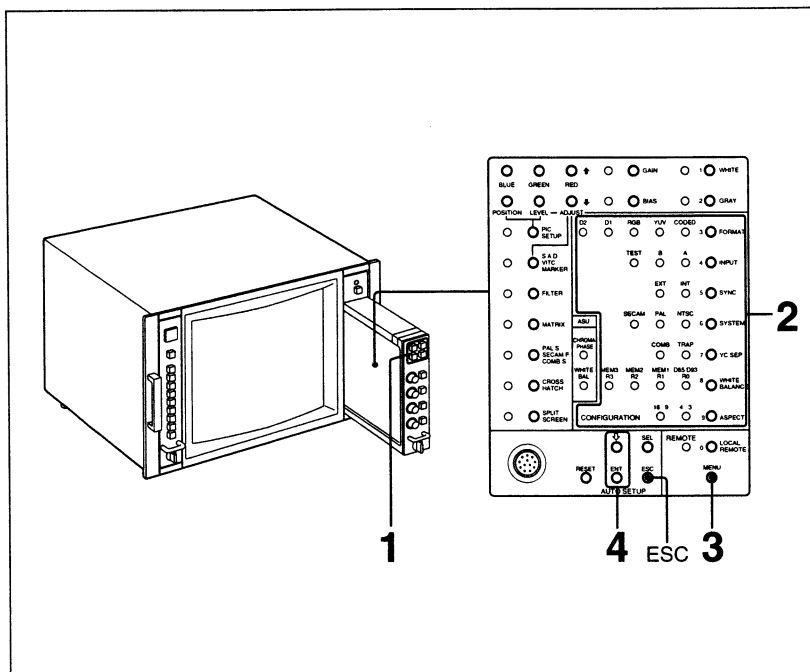
b) Only for BVM-1311. The INPUT selectors 1 and 2 on the BVM-1411P have been set to TRAP.

Using the CONFIGURATION buttons on the HY board in the right drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation.

The stored configuration is always obtained when the assigned INPUT selector is pressed.

When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed.

Operation



- 1** Press one of the INPUT selectors on the front panel.
- 2** Using the following CONFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.
 - FORMAT:** Select the signal format (CODED, YUV, RGB, D-1 or D-2).
 - INPUT:** Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.
 - SYNC:** Select the sync mode (INT or EXT).
 - SYSTEM:** Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.
 - YC SEP:** Select the filter when you select NTSC or PAL for the color system.
 - WHITE BALANCE:** Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.
See "1-4-4. Selecting the White Balance."
 - ASPECT:** Select the picture aspect (4:3 or 16:9).
- 3** When the settings are completed, press the MENU button. The initial menu is displayed.

Section 1 Operation

- 4 Should the cursor on the initial menu not be located at INPUT CONFIG, press the ↓ button until it returns to INPUT CONFIG, and press the ENT button.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.

The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

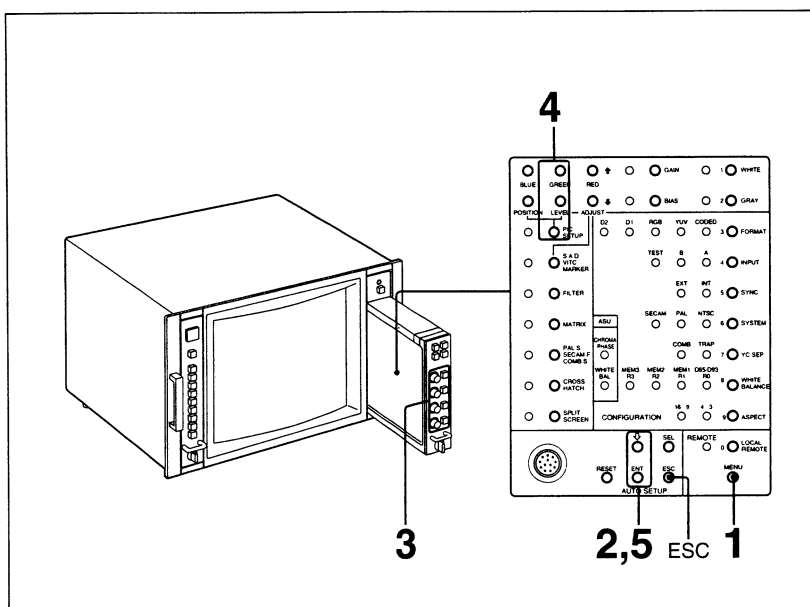
To cancel the operation

Press the ESC button before pressing the ENT button in step 4.

1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches PRESETS, then press the ENT button.
The SAVE PRESETS menu is displayed.

SAVE PRESETS			
■ TEXT ON/OFF			
DATA REGISTER R0 *			
DATA REGISTER R1			
DATA REGISTER R2			
DATA REGISTER R3			
PHASE	100	BRIGHT	100
CHROMA	100	CONTRAST	100
PICTURE SETUP LEVEL 100			
SELECT AND PRESS ENT			

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

- 3** Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.
- 4** Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

Note

The adjustments in steps 3 and 4 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.

For the picture setup level, follow the procedure in "1-6-2. Black Level Adjustment."

To return to the SAVE PRESETS menu, press the ENT button again.

- 5** Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in step 5.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

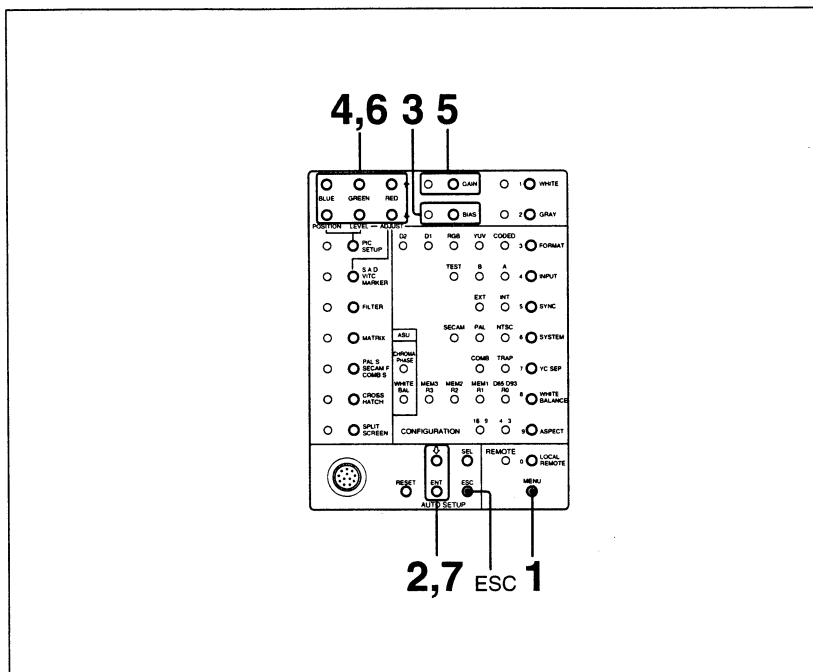
1-4-4. Selecting the White Balance

The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D65 has been stored in all the registers.

Note

The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches WHITE BALANCE, then press the ENT button.
The SAVE WHITE BALANCE menu is displayed.

SAVE WHITE BALANCE			
■ TEXT ON/OFF			
DATA REGISTER R0*			
DATA REGISTER R1			
DATA REGISTER R2			
DATA REGISTER R3			
R: - GAIN	100	BIAS	100
G: - GAIN	100	BIAS	100
B: - GAIN	100	BIAS	100
SELECT AND PRESS ENT			

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.
- 5** Press the GAIN button.
The associated lamp lights.
- 6** Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.

Then, adjust the white balance by following the procedure in “1-6-1. White Balance Adjustment.”

To return to the SAVE WHITE BALANCE menu, press the ENT button again.

- 7** Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.

The message “DATA SAVED” is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 7.

1-4-5. Changing and Applying the Password

The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

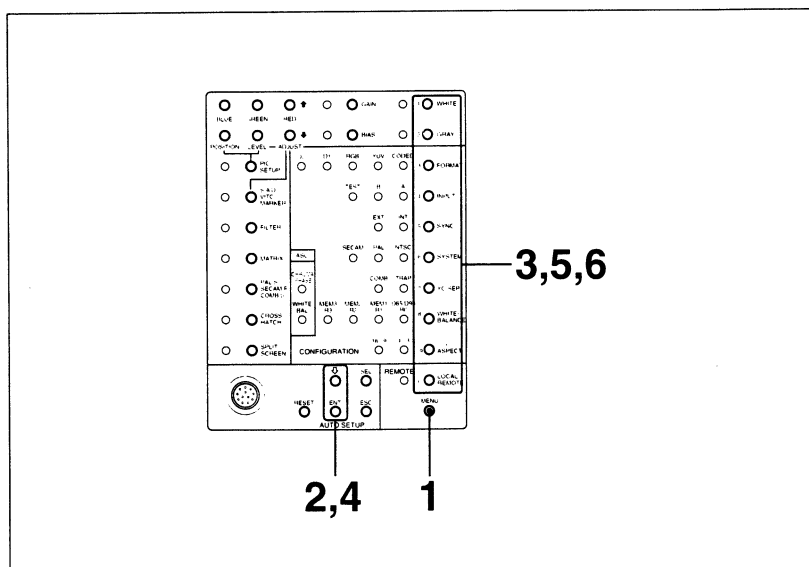
The message **"PLEASE ENTER PASSWORD"** is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message "**INCORRECT ENTRY**" is momentarily displayed and the menu operation is canceled.

To change the password

“9999” has been specified for the password at the factory. Change it to your desired four-digit number as follows.

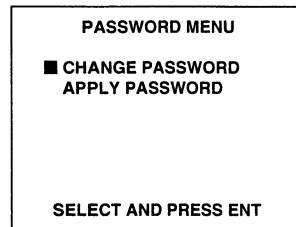
Operation



- 1** Press the MENU button.
The initial menu is displayed.

Section 1 Operation

- 2 Press the $\downarrow$ button until the cursor reaches PASSWORD, then press the ENT button.
The message "ENTER PASSWORD" is displayed.
- 3 Enter the current password (Factory-set: 9999).
The PASSWORD MENU is displayed.



- 4 Select the CHANGE PASSWORD option.
The message "ENTER NEW PASSWORD" is displayed.
- 5 Enter any desired four-digit number as your new password using the buttons labeled 0 to 9.
The message "PLEASE RE-ENTER NEW PASSWORD TO CONFIRM" is displayed.
- 6 Enter the new password again.
The message "PASSWORD CHANGED" is displayed and the new password is now valid.

Note

If an incorrect password is entered, "INCORRECT ENTRY. PASSWORD NOT CHANGED" is displayed and the menu operation is canceled.

To cancel the operation

Press the ESC button before re-entering the new password in step 6.

To apply the password

The specified password can be activated/deactivated independently for each of the initial menu options and, with the BKM-2056 installed, the auto setup option.

Operation

- 1** Perform steps 1 through 3 mentioned in "To change the password."
- 2** By pressing the ↓ button and then ENT button, select the APPLY PASSWORD option.
The APPLY PASSWORD menu is displayed.

APPLY PASSWORD	
■ INPUT CONFIG	NO
WHITE BALANCE	NO
PRESETS	NO
AUTO SETUP	NO
REMOTE CONTROL	NO
MONITOR CONFIG	NO
SAVE AND APPLY	
SELECT AND PRESS ENT	

NO is displayed for each option for which the password is not activated.

YES is displayed for each option for which the password is activated.

- 3** By pressing the ↓ button, move the cursor to the option for which the password application is to be changed.
- 4** Press the ENT button to change NO to YES or vice versa.
(Pressing the button toggles the YES/NO setting.)

Repeat steps 3 and 4 for the other options as desired.

- 5** When the password application setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "PASSWORD APPLIED" is momentarily displayed, and the monitor returns to normal status.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

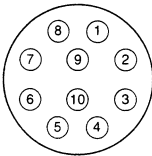
Section 1 Operation

1-4-6. Assigning the Remote Control Functions

The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.
 The mode change is achieved through the REMOTE CONTROL menu operation.
 The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

Function			Pin No.						
INPUT	SYNC	MODE	1	2	3	4	5	6	7
A	INT	AUTO	O	O	–	O	–	–	–
		MONO	S	O	–	O	–	–	–
	EXT	AUTO	O	O	–	S	–	–	–
		MONO	S	O	–	S	–	–	–
B	INT	AUTO	O	S	–	O	–	–	–
		MONO	S	S	–	O	–	–	–
	EXT	AUTO	O	S	–	S	–	–	–
		MONO	S	S	–	S	–	–	–
VITC OFF			–	–	–	–	–	S	–
VITC HOLD			–	–	–	–	–	O	S
TALLY ON			–	–	S	–	–	–	–

S: Short-circuit with pin No.8
 O: Open
 –: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.
 Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

CONFIGURE PARALLEL mode

The functions of the buttons or switches on the front panel or in the drawer listed below can be assigned to pins 1, 2 and 4 through 7, as desired.

Front panel

INPUT selectors 2 to 4 (input selection)

MONO MODE switch (AUTO/MONO mode switching)

HY board inside the drawer

WHITE button (ON/OFF)

GRAY button (ON/OFF)

SYNC button (INT/EXT sync mode switching)

YC SEP button (COMB/TRAP filter switching)

ASPECT button (16:9/4:3 picture aspect switching)

S.A.D. /VITC/MARKER button (S.A.D. or VITC ON/OFF)

FILTER button (ON/OFF)

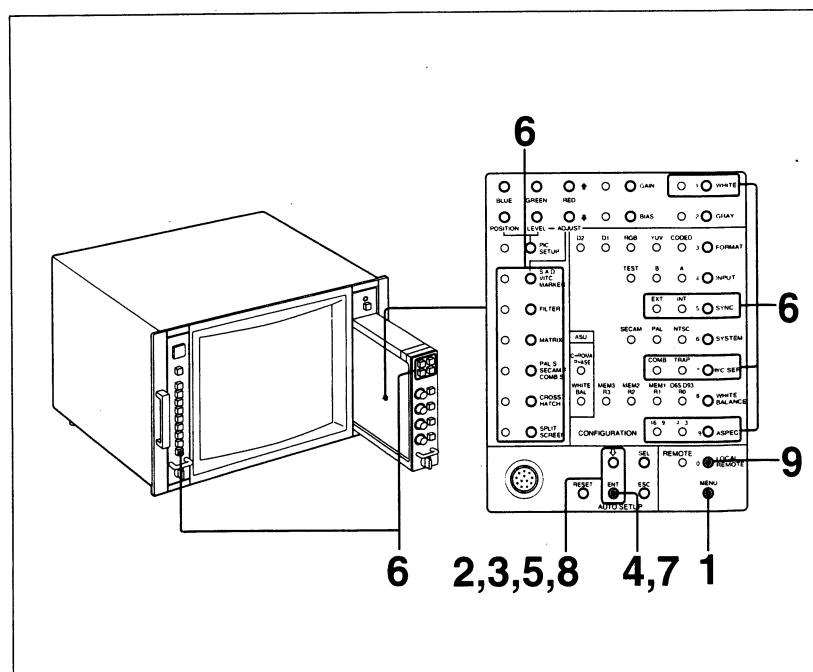
MATRIX button (ON/OFF)

PAL S/SECAM F/COMB S button (mode or type switching)

CROSSHATCH button (ON/OFF)

SPLIT SCREEN button (ON/OFF)

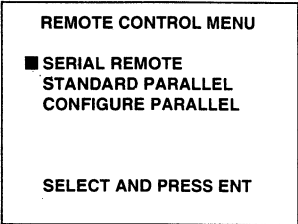
Operation



- 1** Press the MENU button to display the initial menu.

Section 1 Operation

- 2
- Move the cursor to REMOTE CONTROL and press the ENT button.
The REMOTE CONTROL MENU is displayed.



Note that SERIAL REMOTE is for future use.

- 3
- To change the pin assignment of the REMOTE connector,

move the cursor to CONFIGURE PARALLEL and press the ENT button.

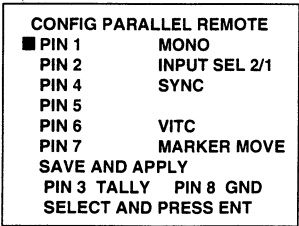
To resume the factory-set pin assignment, move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-32.)

Note

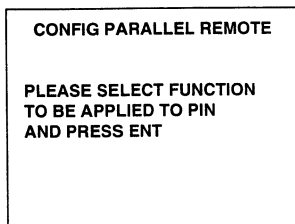
When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

- 4
- When STANDARD PARALLEL has been selected in step 3, the selected mode is now activated and the monitor returns to normal status.

When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.



- 5** Move the cursor with the ↓ button to the pin whose assignment is to be changed, then press the ENT button.
The following message appears.



- 6** Press the button on the front panel or in the drawer (listed on page 1-33) whose function is to be assigned to the pin selected in step 5.
- 7** Press the ENT button.

Repeat steps 5, 6 and 7 for the other pins as desired.

- 8** When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message “DATA SAVED” is momentarily displayed, and the monitor returns to normal status.
- 9** Press the LOCAL/REMOTE button to set the monitor to the remote control mode.

To cancel the operation

Press the ESC button before pressing the ENT button in step 8.

Notes

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.

Section 1 Operation

1-4-7. Defining the Monitor Configuration

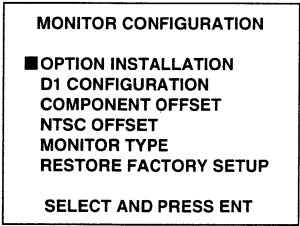
In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

- OPTION INSTALLATION:** To specify the installed optional boards.
- D1 CONFIGURATION:** To specify the system in which D-1 signals are to be received.
- COMPONENT OFFSET:** To set the setup level for component signals
- NTSC OFFSET:** To set the setup level for NTSC signals.
- MONITOR TYPE:** To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

To start with the MONITOR CONFIG menu operation

- 1** Press the MENU button to display the initial menu.
- 2** Press the ↓ button until the cursor reaches MONITOR CONFIG, then press the ENT button.
The MONITOR CONFIGURATION menu is displayed.



To specify the installed optional boards

- 1** Set the cursor to OPTION INSTALLATION on the MONITOR CONFIGURATION menu and press the ENT button.
The OPTION INSTALLATION menu 1 is displayed.

OPTION INSTALLATION 1	
■ AUTO SETUP	YES
D1 OPTION	YES
D2 OPTION	YES
NTSC DECODER	YES
NTSC COMB ADP	YES
PAL DECODER	YES
PAL COMB ADP	YES
OTHER OPTIONS	
SELECT AND PRESS ENT	

- 2** By pressing the $\downarrow$ button, move the cursor to the board for which the YES/NO setting must be changed, and press the ENT button.
YES must be displayed for the installed boards and NO for uninstalled boards. Pressing the ENT button toggles the YES/NO setting.

Repeat step 2 for the other boards as necessary.

- 3** Move the cursor to OTHER OPTIONS and press the ENT button.
The OPTION INSTALLATION menu 2 is displayed.

OPTION INSTALLATION 2	
■ PAL-M DECODER	YES
SECAM DECODER	YES
RGB/COMP O/P	YES
VITC BOARD	YES
SAFE AREA	YES
BLACK GENER	YES
OTHER OPTIONS	
SAVE AND APPLY	
SELECT AND PRESS ENT	

- 4** Set YES/NO for the boards listed in menu 2 in the same manner as with menu 1.
- 5** When the YES/NO setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Section 1 Operation

To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES.

- 1 Move the cursor with the ↓ button to D1 CONFIGURATION on the MONITOR CONFIGURATION menu and press the ENT button.
The D1 CONFIGURATION menu is displayed.

D1 CONFIGURATION	
■ PAL	*
NTSC	
SECAM	
SPECIFY SETTING OF LOCAL SWITCH ON BV BOARD	
SELECT AND PRESS ENT	

The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the system matching setting of the local switch on the BV board.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level for component signals

- 1 Move the cursor with the ↓ button to COMPONENT OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The COMPONENT OFFSET menu is displayed.

COMPONENT OFFSET	
■ N-10/SMPTE	*
BETACAM 0	
BETACAM 7.5	
SELECT AND PRESS ENT	

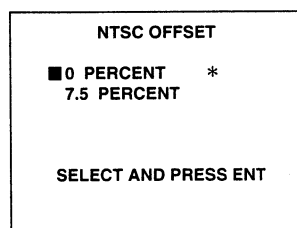
The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the appropriate setup level.
N-10/SMPTE: When supplying the 100/0/100/0 component signals.
BETACAM 0: When supplying the 100/0/75/0 component signals.
BETACAM 7.5: When supplying the 100/7.5/75/7.5 component signals.

- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level of NTSC signals

- 1 Move the cursor with the ↓ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The NTSC OFFSET menu is displayed.

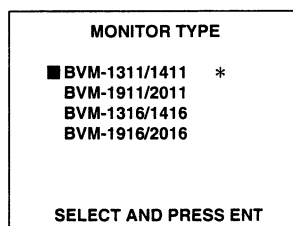


The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the appropriate setup level.
0 PERCENT: When supplying NTSC signals of the 0 IRE set-up level.
7.5 PERCENT: When supplying NTSC signals of the 7.5 IRE set-up level.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To define the model of your monitor

- 1 Move the cursor with the ↓ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button.
The MONITOR TYPE menu is displayed.



The asterisk indicates the current setting.

- 2 Move the cursor with the ↓ button to the model name of your monitor.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

Section 1 Operation

To restore the factory setup

- 1 Move the cursor with the ↓ button to RESTORE FACTORY SETUP in the MONITOR CONFIGURATION menu and press the ENT button.
The following message is displayed.

RESTORE FACTORY SETUP

**WARNING !!
THIS WILL DESTROY ALL
MANUALLY ENTERED DATA
AND CONFIGURATIONS**

**PRESS ENT TO CONFIRM
OR ESC TO QUIT**

- 2 Press the ENT button.
All the changed menu options returns to the factory-set conditions.

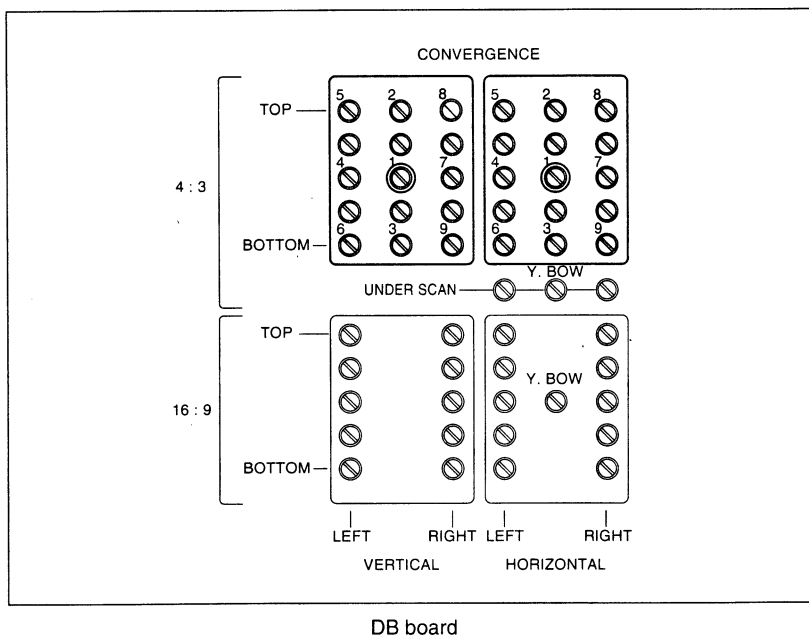
To cancel the restoration, press the ESC button before pressing the ENT button in step 2.

1-5. Convergence Adjustments

For the convergence adjustment, use the CONVERGENCE controls on the DB board inside the left drawer. Use the supplied screwdriver to turn these controls.

1-5-1. Convergence of a 4:3-Aspect Normal Picture

Adjust the convergence of 4:3 scan mode using the 4:3 controls.



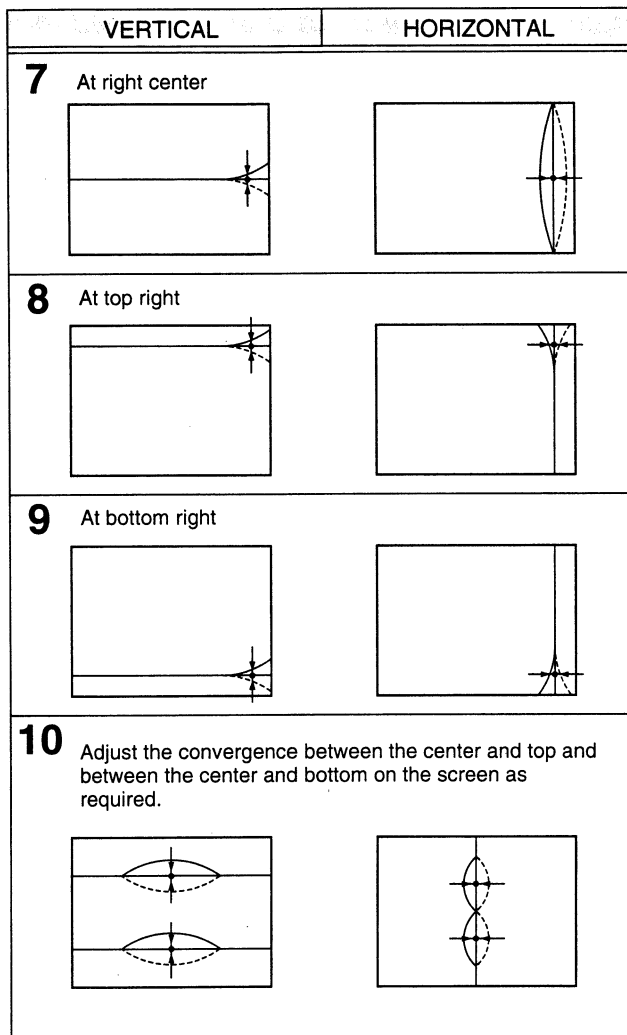
- Numbers 1 to 9 in the illustration above refer to the sequence of operations.
- The HORIZONTAL controls adjust the convergence horizontally, and the VERTICAL controls adjust it vertically.
- When adjusting the convergence, observe the portion of the screen indicated by arrows in the figures on the subsequent pages. The red and blue beams move symmetrically to the green beam.

Section 1

Operation

Adjust the convergence at the corresponding portion of the screen, as follows.

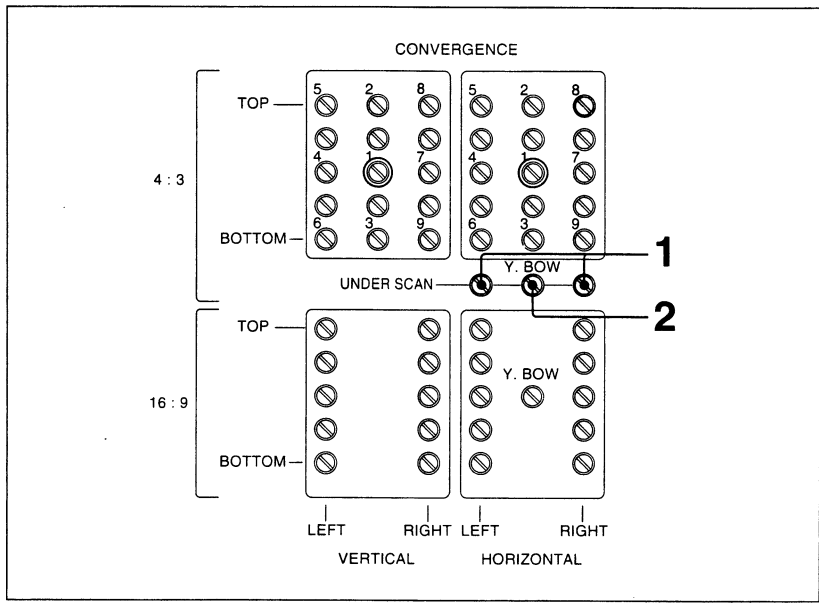
VERTICAL	HORIZONTAL
1 At center	
2 At center top	
3 At center bottom	
4 At left center	
5 At top left	
6 At bottom left	



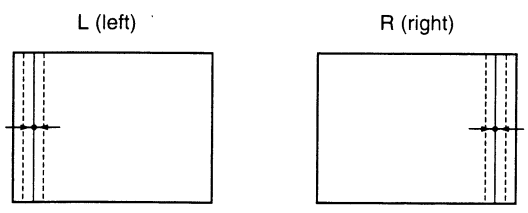
Section 1 Operation

1-5-2. Convergence of a 4:3-Aspect Underscanned Picture

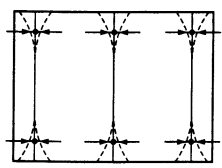
Adjust the convergence of 4:3 underscan mode using the 4:3 UNDERSCAN and 4:3 UNDERSCAN Y. BOW controls after the convergence adjustment of normal scan mode is completed.



- Adjust the horizontal convergence with the 4:3 UNDERSCAN controls.

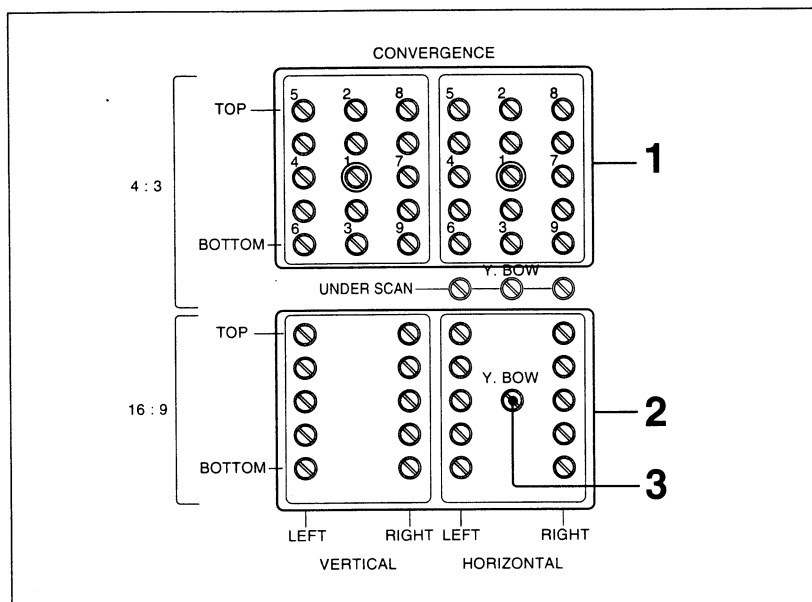


- Adjust the horizontal convergence at the corners of the picture with the 4:3 UNDERSCAN Y. BOW control.



1-5-3. Convergence of a 16:9-Aspect Picture

Adjust the convergence of 16:9 scan mode.



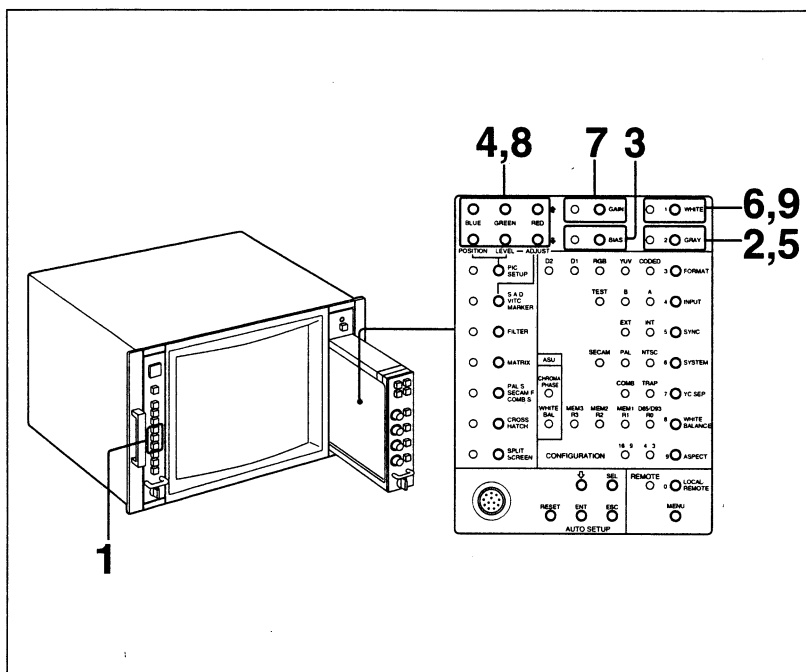
- 1** Adjust the convergence at the center of the screen following the procedure mentioned in the "1-5-1. Convergence of a 4:3 aspect normal picture."
- 2** Adjust the convergence at the right and left portions of the screen using the 16:9 controls.
- 3** Adjust the horizontal convergence at the corners using the 16:9 Y. BOW control.

Section 1 Operation

1-6. Picture Adjustments

1-6-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



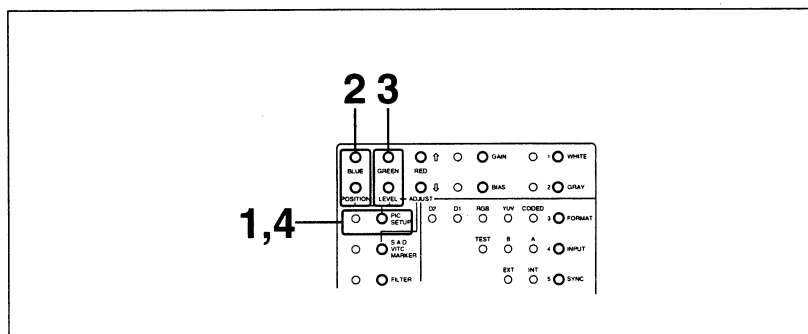
- 1** Display a test signal on the screen.
- 2** Press the GRAY button.
The associated lamp lights and the internal gray signal is displayed on the screen.
- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons **↑** or **↓**.
- 5** Press the GRAY button again.
The associated lamp goes off and the internal gray signal disappears.
- 6** Press the WHITE button.
The associated lamp lights and the internal 100% white signal is displayed on the screen.

- 7** Press the GAIN button.
The associated lamp lights.
- 8** Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons $\uparrow$ or $\downarrow$.
- 9** When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

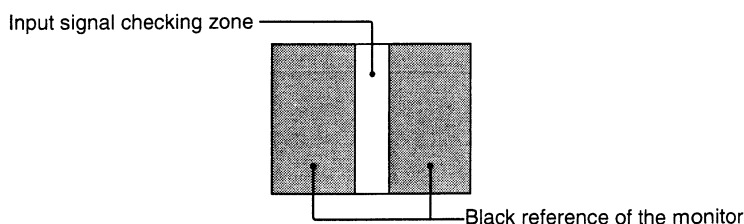
For white balance adjustment using a color analyzer or equivalent, see Section 2.

1-6-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



- 1** Press the PIC SETUP button.
The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.



- 2** Press the POSITION buttons $\uparrow$ or $\downarrow$ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.
- 3** Press the LEVEL buttons $\uparrow$ or $\downarrow$ to match the brightness of the black reference area with that of the input black signal.
- 4** Press the PIC SETUP button again.

Section 1 Operation

1-7. Specifications

General	
System	BVM-1311: 525 lines per picture, 60 fields per second interlaced, NTSC BVM-1411P: 625 lines per picture, 50 fields per second interlaced, PAL
CRT	Super Fine Pitch Trinitron 0.25 mm aperture grille, 90-degree deflection, 36 mm dia. in-line gun Effective picture size: 200.3 × 267.2 mm (h/w) (8 × 10 ⁵ / ₈ inches) 330.8 mm (13 inch) picture measured diagonally
Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 minutes to meet specifications
Anode voltage	Properly adjusted HV 25 kV at zero beam current
Power consumption	Typical: 142 W Maximum: 160 W
Power requirements	BVM-1311: 100-120 V AC ±10%, 50/60 Hz BVM-1411P: 220-240 V AC ±10%, 50/60 Hz
Dimensions	426 × 281.5 × 489 mm (w/h/d) (16 ⁷ / ₈ × 11 ¹ / ₈ × 19 ³ / ₈ inches) including projecting parts and controls
Mass	32 kg (70 lb 9 oz)
Inputs/outputs	
Video inputs	BNC type (5 inputs with 5 loop-through outputs) VIDEO A/B, TEST, R/G/B: 1 Vp-p composite ±6 dB positive, high-impedance Y: Composite, 1.0 Vp-p ±6 dB, high-impedance R-Y/B-Y: 0.7 Vp-p ±6 dB, high-impedance
Sync input	EXT SYNC: BNC type (1 input with 1 loop-through output) 1 to 8 Vp-p negative, high-impedance
Input return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Video outputs	DECODER OUT: BNC type (3) Output decoded signals only when BKM-1440 is installed.
Remote control	REMOTE: 10-pin connector (1)
Probe receptacle	12-pin connector (1)

Video signal

Luminance channel (RGB and composite signals)

Differential gain	Within 2% for a luminance from 0 to 138 cd/m ²
Differential phase	Within 2° for a luminance from 0 to 138 cd/m ²
Frequency response	Monochrome mode: 100 Hz to 8 MHz ± 1 dB (aperture correction at 0) Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-1311) or 4.43 MHz (BVM-1411P) region RGB mode: 100 Hz to 10 MHz ± 1 dB

Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	$\pm 1^\circ$ (standard input signal)
Phase control range	More than $\pm 15^\circ$ (standard input signal)
Chroma gain control range	More than ± 6 dB

Chrominance/luminance

Time error	Less than 30 nsec
Gain error	Less than 5%
Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)

DC restoration (RGB and composite signals)

Back porch type
Back porch level: Within 1% of peak luminance, 10% to 90% (average picture level)

Synchronization

AFC time constant	0.5 msec (fast), 2 msec (normal) or 7 msec (slow)
Line pull range/line hold range	More than ± 500 Hz at 0.5 msec time constant
Vertical blanking time	Normal: Within 1 msec. Underscan: Within 0.8 msec.
Horizontal retrace time	Within 10 μ sec

Section 1 Operation

Picture performance

- Normal scan5% overscan of CRT effective screen area (adjustable range more than ±15%)
- Underscan3% underscan of CRT effective screen area (adjustable range more than ±15%)
- LinearityWithin a central area bounded by a circle whose diameter equals the picture height, within 0.5% of the picture height, out of area 1%
- Color temperatureD65, adjustable to other color temperatures
- Nominal chromaticity coordinates

BVM-1311: SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-1411P: EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

- Convergence errorError: Less than ±0.005
Central area: Less than 0.3 mm
Periphery: Less than 0.6 mm
- Calibrated contrast138 cd/m² at peak white of standard 1 Vp-p signal
- Raster size stabilityLess than 1% picture height, 0% to 100%
APL at 138 cd/m² peak luminance
- Scan delayHorizontal: Approx. 1/4 line
Vertical: Approx. 1/2 field
- ResolutionMore than 700 TV lines (center, at 138 cd/m² luminance)

Environment

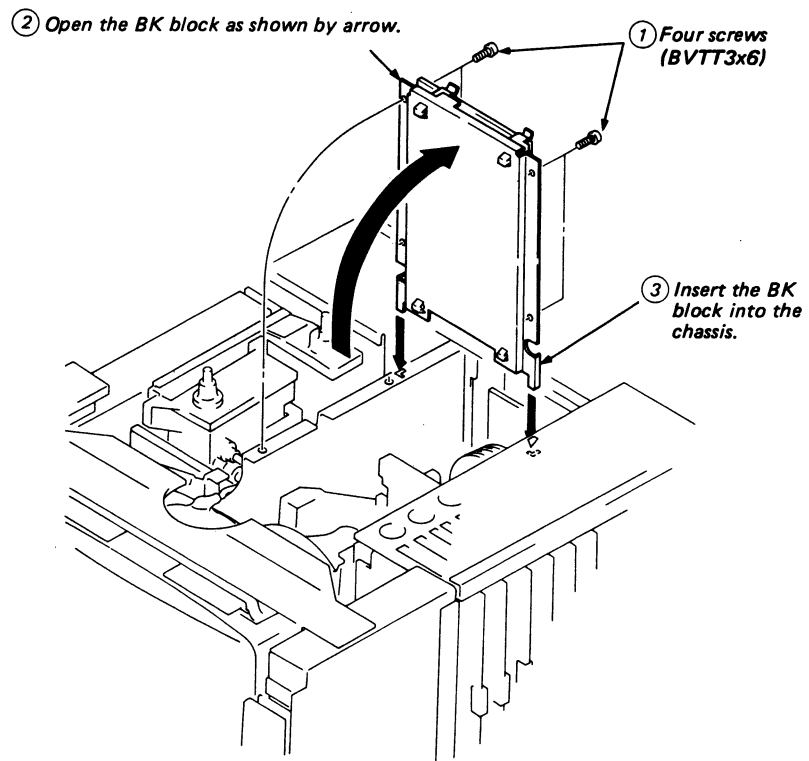
- Operating temperature0° C to 40° C (32° F to 104° F)
- Optimum temperature range20° C to 30° C (68° F to 86° F)
- Humidity0 to 90%
- AltitudeApprox. 3,050 m (10,000 feet) max.

Supplied accessories

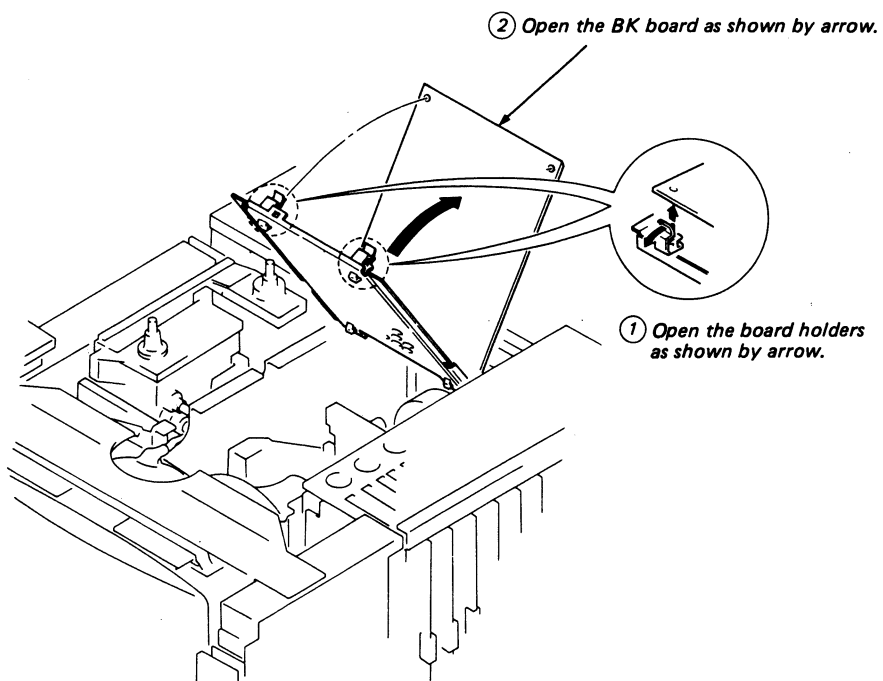
AC power cord (1)
Cord stopper (1)
Screwdriver (1)
Drawer keys (2)
Extension board (1)
10-pin connector (1)
Fuses (2)
Tally number plates (1 set)
Operation and maintenance manual (1)

Design and specifications are subject to change without notice.

2-5. BK BLOCK REMOVAL

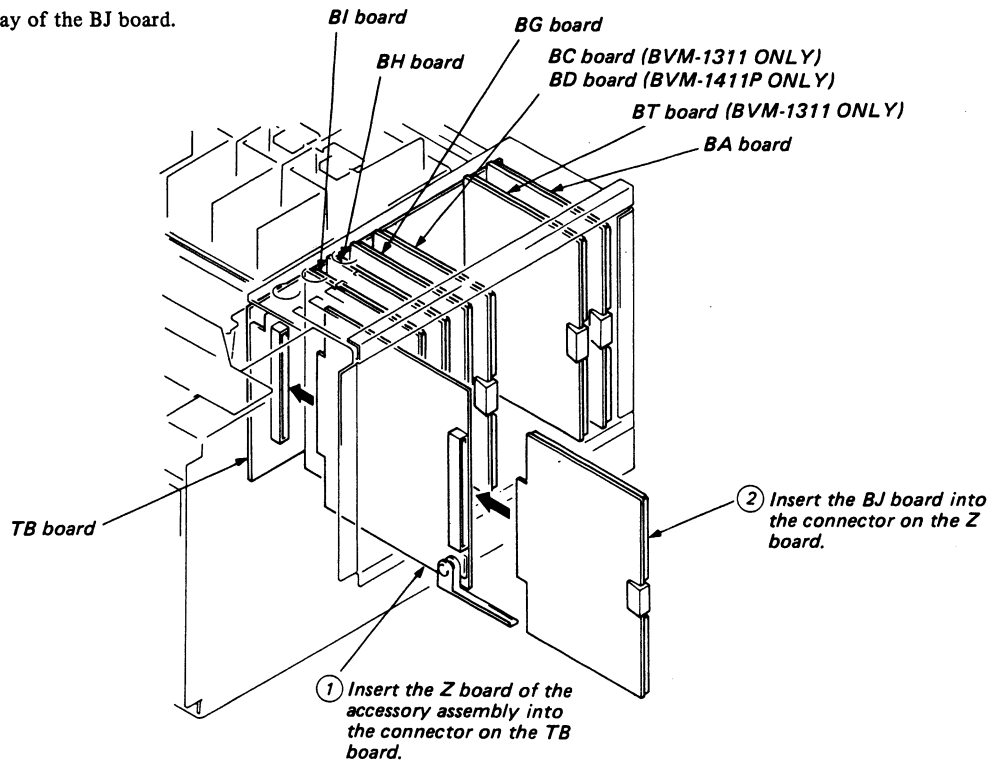


2-6. CHECK OF BK BOARD

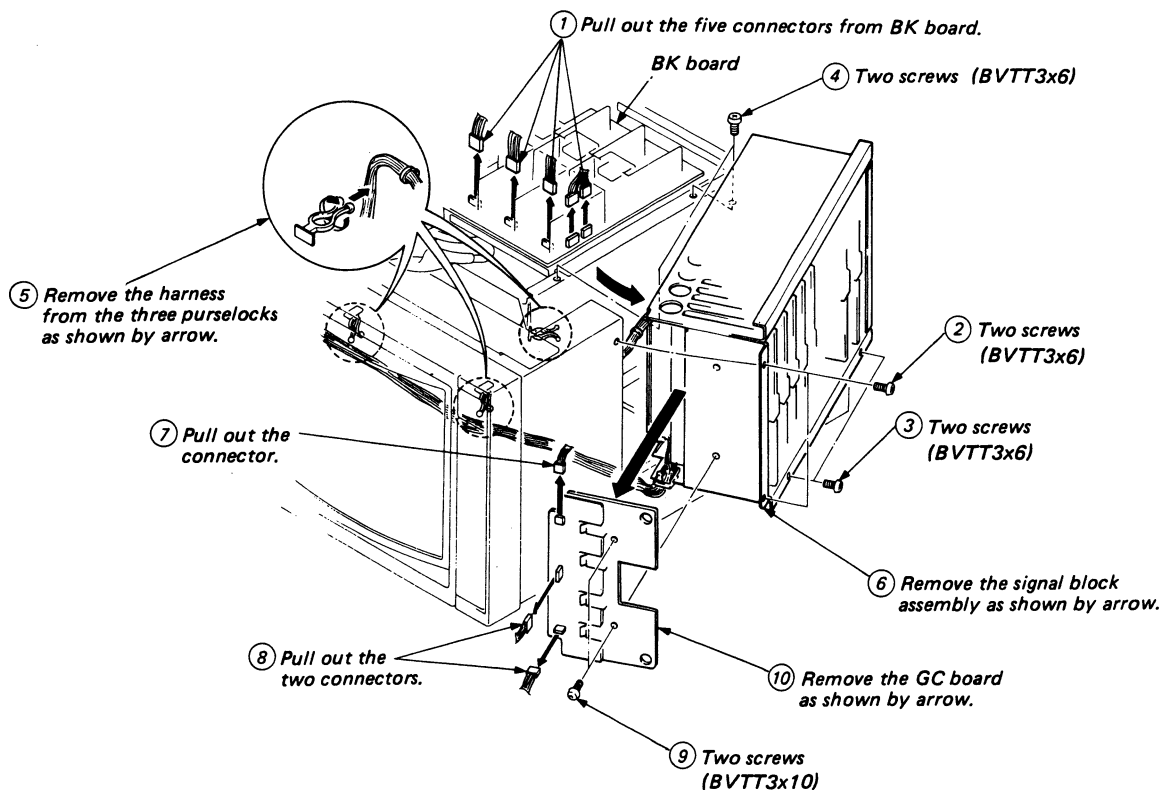


2-7. CHECK OF BA, BT, BC, BD, BG, BH, BI AND BJ BOARDS

Note: The BA, BT, BC, BG, BH, and BI boards can be checked in the same way of the BJ board.



2-8. GC BOARD REMOVAL



SECTION 3 CIRCUIT DESCRIPTIONS

3-1. QA, QB, BA BOARDS

3-1-1. Input Circuit

Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed. QB board also has same function.

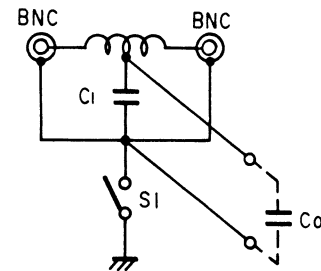


Figure 1

Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$$A = \frac{R_c}{R_i} : \text{Gain of amplifier for input A}$$

$$B = -\frac{R_c}{R_i} : \text{Gain of amplifier for input B}$$

When input (ec + ei) is applied to input A and input (ec - ei) to input B, then output eo is

$$e_o = \frac{R_c}{R_i} (ec + ei) + \left(-\frac{R_c}{R_i}\right) (ec - ei) = 2 \frac{R_c}{R_i} ei$$

This equation indicates that ec is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

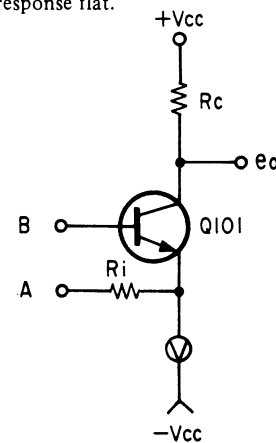


Figure 2

Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.

An inverted composite video signal or composite sync signal (eo) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of eo with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of eo with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

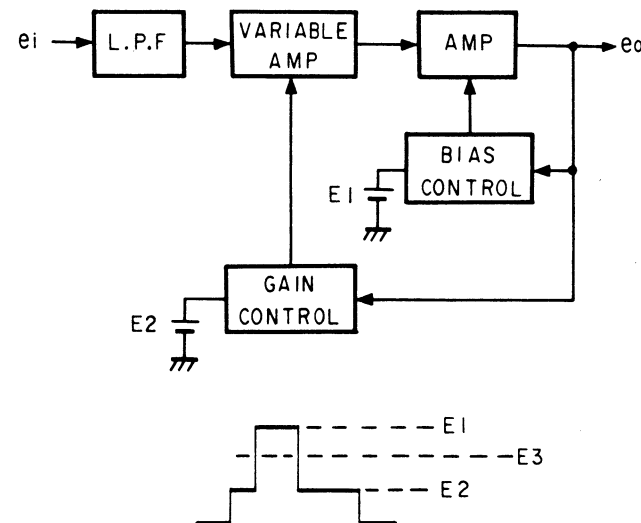


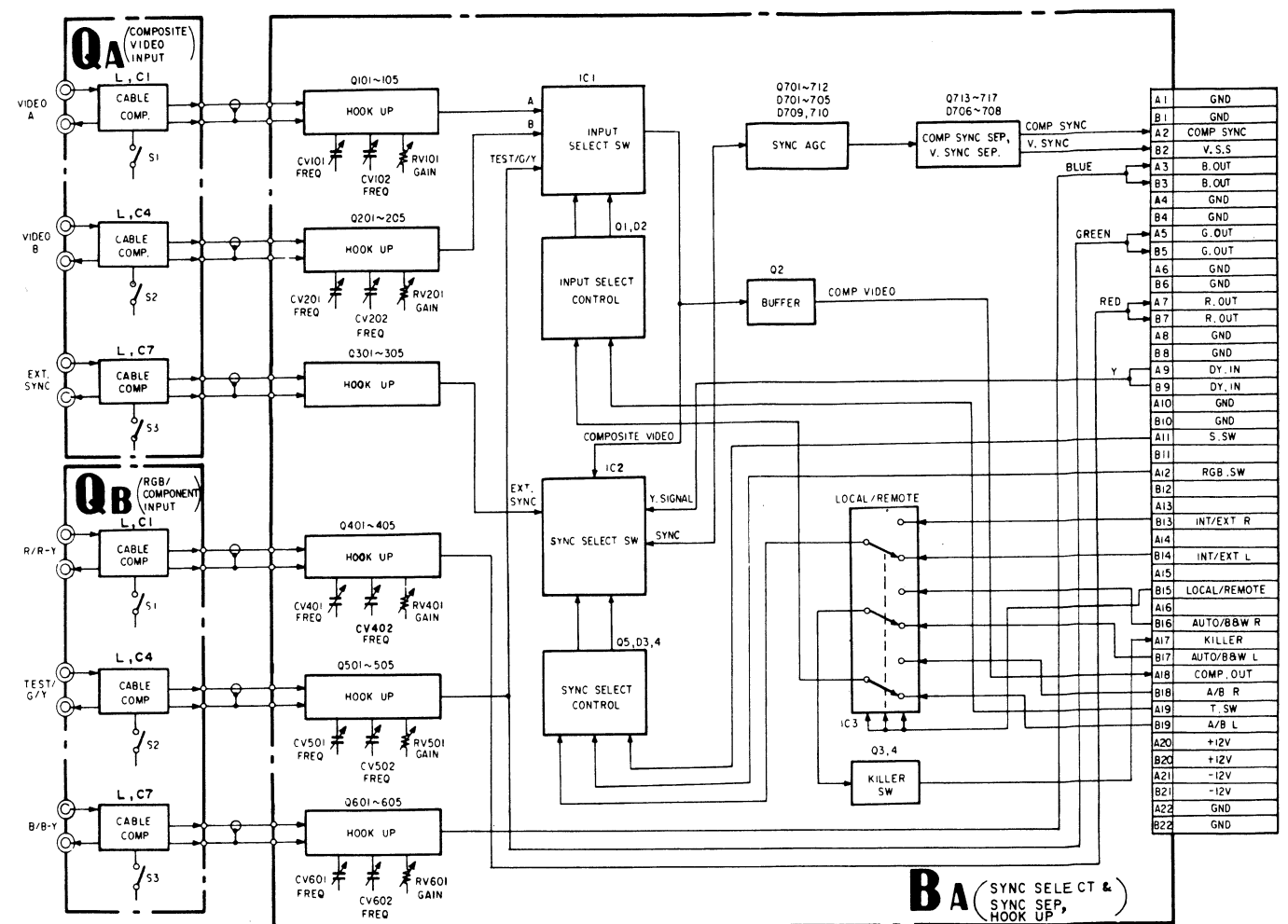
Figure 3

Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage eo with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

BLOCK DIAGRAM OF QA, QB, BA BOARDS



3-2. BG BOARD

3-2-1. Luminance Signal Circuit

Filter SW
IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

Aperture Control
Aperture control circuit is composed of DL1(delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin①and③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal: e_{r0} ,
Delayed signal by delay line: e_{r1}
Second delayed signal: e_{r2}

See Figure 4
 e_1 (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

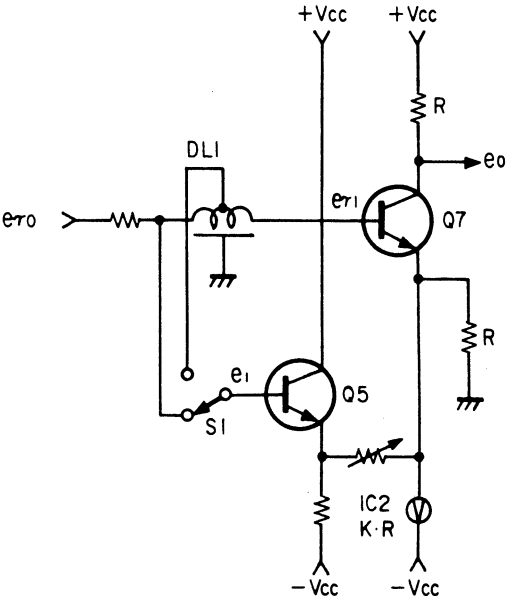


Figure 4

$$e_1 = (e_{r0} + e_{r2})/2$$

Therefore e_0 is

$$e_0 = \underbrace{-(e_{r1} + \frac{1}{K}(e_{r1} - \frac{1}{2}(e_{r0} + e_{r2})))}_{1st \text{ term}} + \underbrace{\frac{1}{2}(e_{r0} + e_{r2}))}_{2nd \text{ term}}$$

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied. Switch S1 is used for selection of boost frequency.

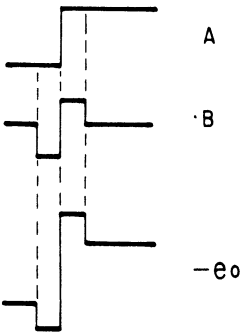


Figure 5

Y Delay, Y Buffer Amplifier
Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

R-Y Amplifier and Clamping
The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

R-Y Gain Control Amplifier
This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑧ of IC4.

AGC Pulse Generator
Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

Gain Control Amplifier for AGC Pulse
Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

Color Gain Control
AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and mached by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

3-2-3. G-Y MATRIX amplifier

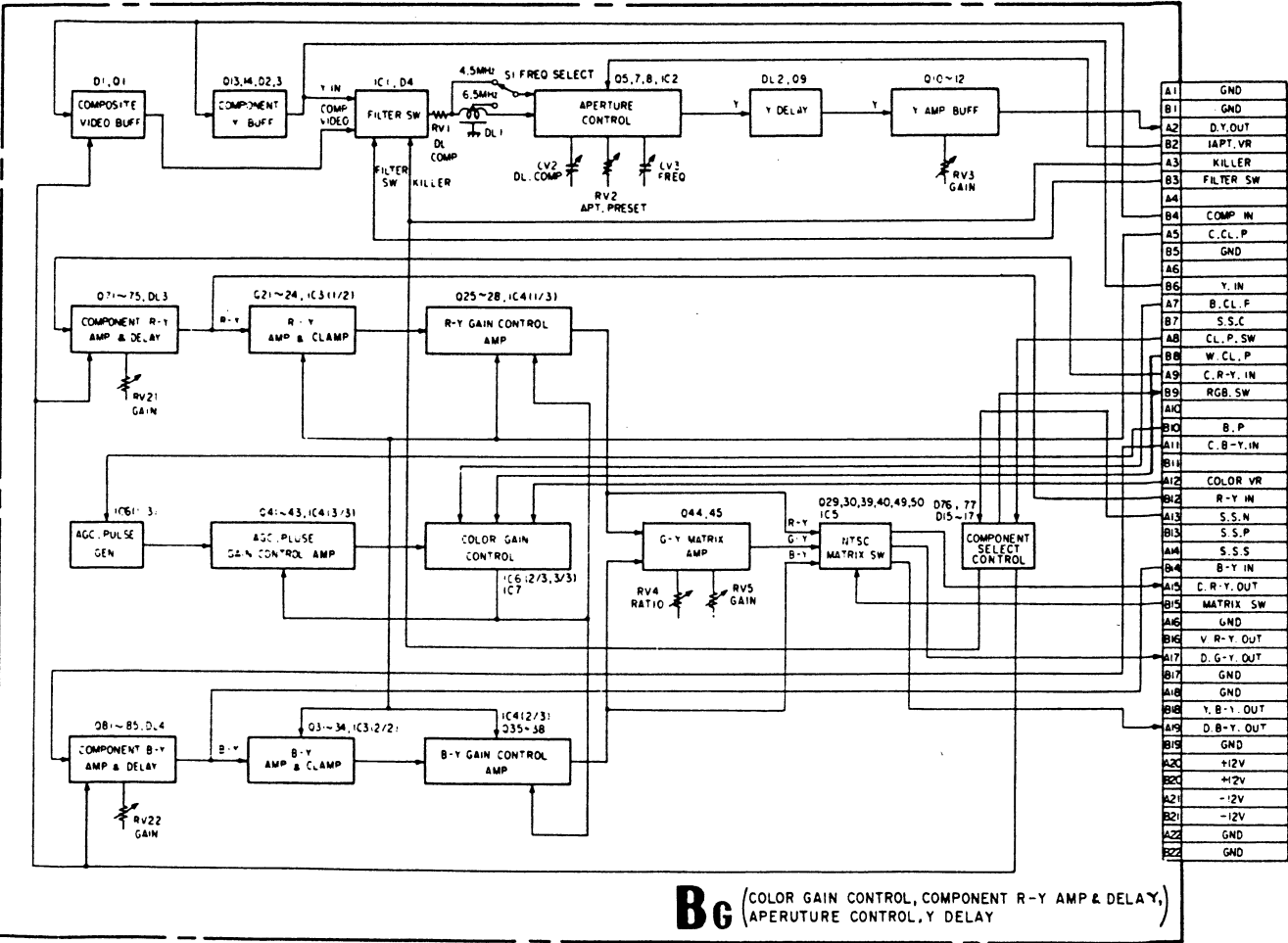
G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

3-2-5. COMPONENT R-Y Amplifier and Delay Circuit
R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

BLOCK DIAGRAM OF BG BOARD



3-12. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

3-12-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V). In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier. See Figure 15(a). In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier. See Figure 15(b).

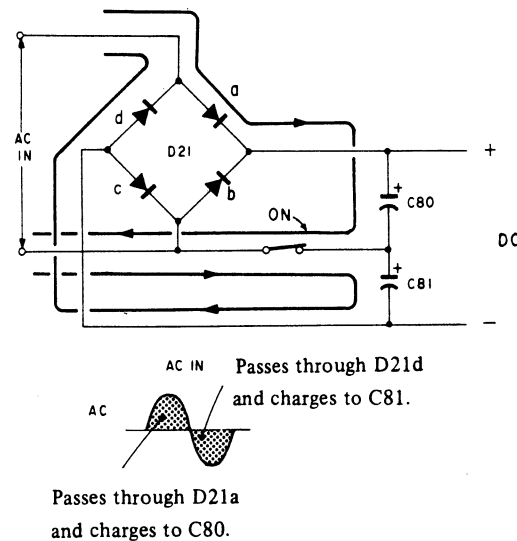


Figure 15(a)

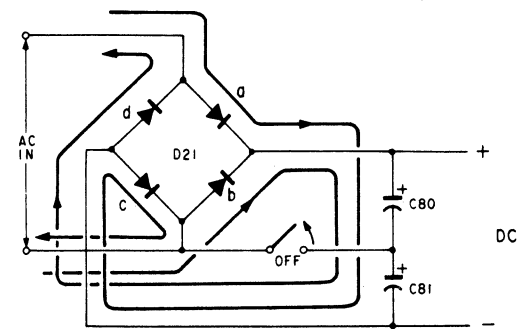


Figure 15(b)

3-12-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector. This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically. When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically. Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel. When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

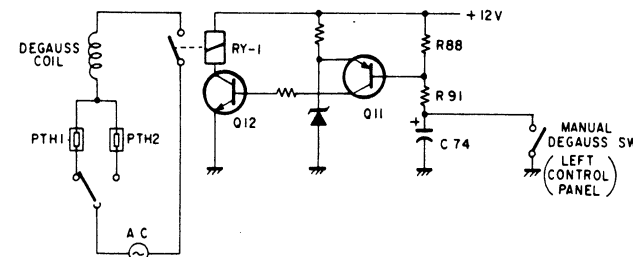


Figure 16

3-12-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

3-12-4. Switching Regulator Circuit

Block diagram is shown in Figure 20. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage E_{IN} rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer). Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, $\pm 15V$, $\pm 18V$ and $+5V$. The other is for high voltage $\pm 150V$ power supply.

Low voltages are generated by IC2, T1, T2, T3 and Q1.

High voltages are generated by IC3, T6, T7 and Q2

Refer to block diagram

Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

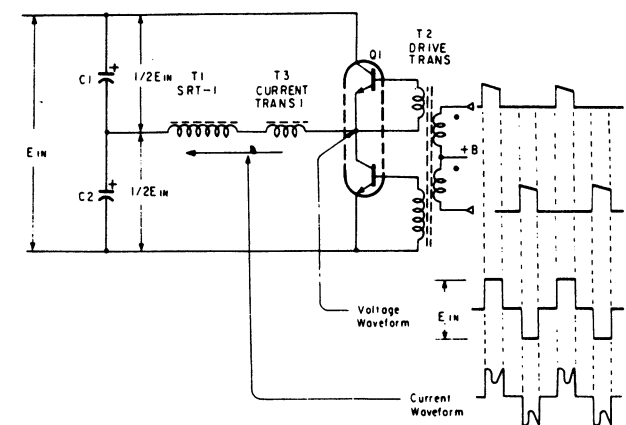


Figure 17

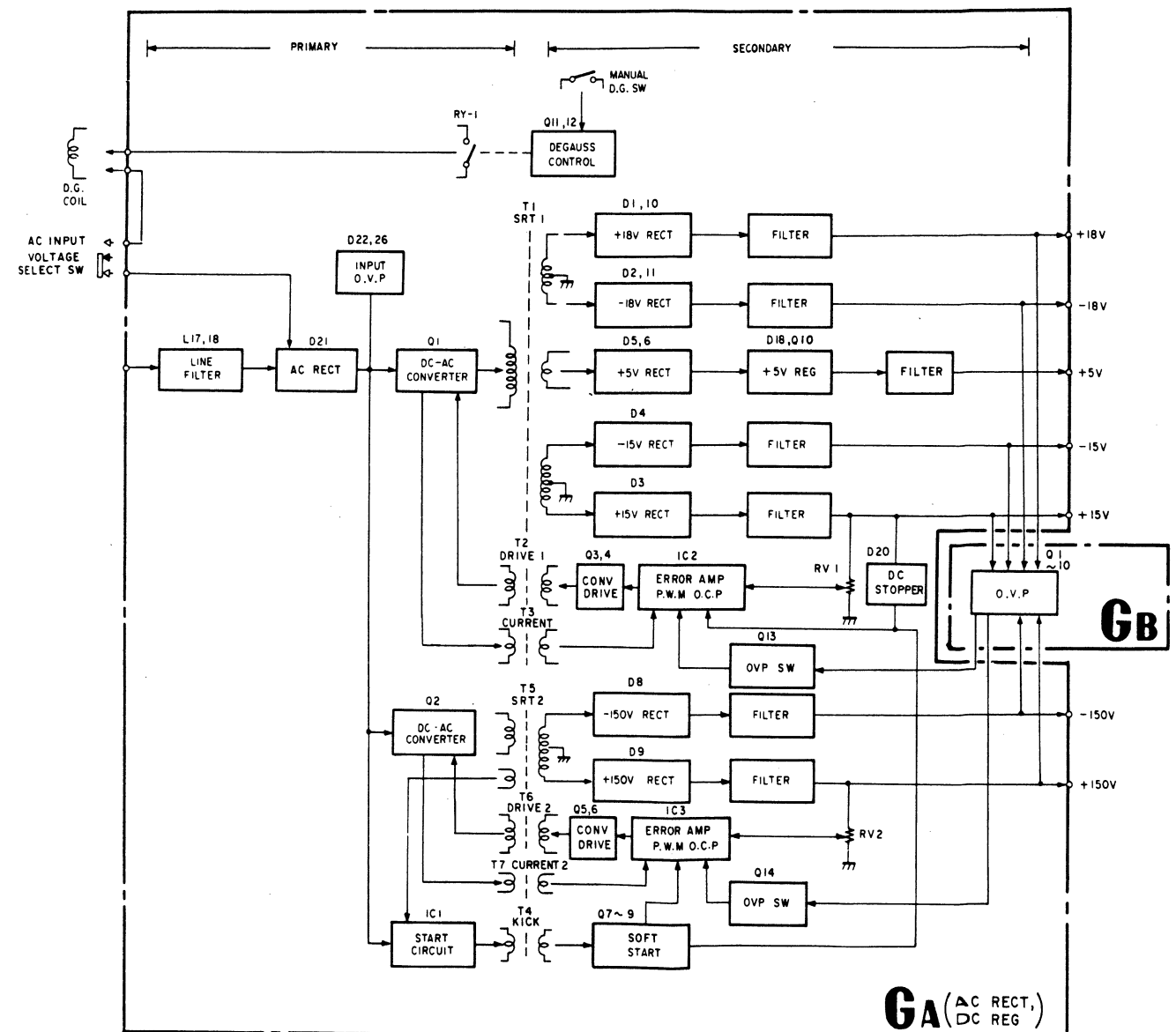
3-12-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA.

GB board works for over voltage protection.

When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

BLOCK DIAGRAM OF GA, GB BOARD



3-13. CONVERGENCE CIRCUIT
(DB, EB BOARDS, DCT BLOCK)

3-13-1. General Description

This is a simple explanation of the convergence system in Super fine Trinitron picture tube used in this model.
The Deflection Yoke (DY) used in this model generates an almost uniform magnetic field in order to get fine beam spot size. Accordingly basically misconvergence of horizontal direction as shown in Figure 18 is generated on the picture screen.

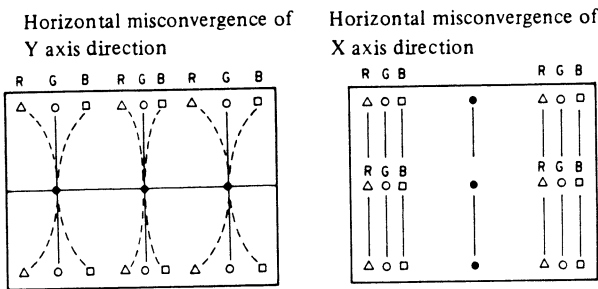


Figure 18

3-13-2. Static Electrical Convergence System

Trinitron system has a unique static convergence system. The structure of electric gun is shown in Figure 19. G6 is the electrode for convergence. Static electrical convergence control can be used. In this system beam spot deterioration is less than that of the electromagnetic system.

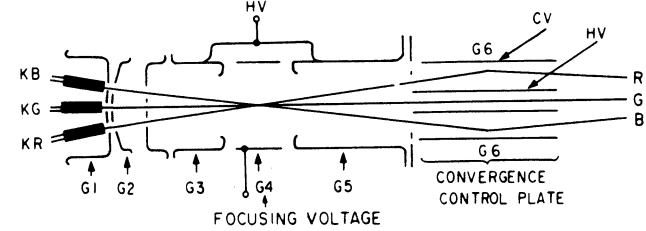
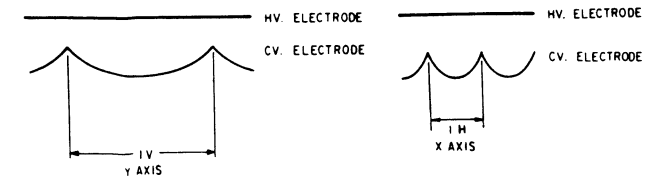


Figure 19

3-13-3. Convergence Correction Circuit
(Horizontal Convergence)

Misconvergence of horizontal direction on Y axis is corrected by applying vertical rate parabola waveform to the convergence plate (G6).
And misconvergence of horizontal direction is corrected by applying horizontal rate parabola waveform to G6. See Figure 20.



HORIZONTAL MISCONVERGENCE

Figure 20

In this model, transformer is used to supply correction voltage to the G6 electrode for the horizontal direction misconvergence. In the secondary of the transformer peak clamp circuit using diode is applied so that both the vertical rate parabola waveform and horizontal rate parabola waveform are mixed and supplied to CV electrode. See Figure 21.

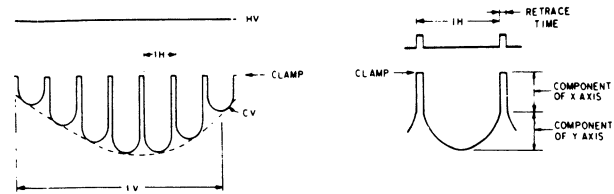


Figure 21

The correction waveforms are generated in DB board and output amplifier is located in EB board.

3-13-4. Vertical Convergence

Theoretically there is no misconvergence of Vertical direction since electric gun is aligned in line. But there is a slight amount of misconvergence due to the variations of CRT and DY and also due to the terrestrial magnetism.

There are also 2 kinds of misconvergence of vertical direction on X axis and Y axis as same as horizontal direction.

Misconvergence of Vertical direction on X axis is corrected by CY (convergence yoke).

Figure 22 shows the CRT neck as seen from the rear side.

Red beam and Blue beam are moved to the vertical direction differentially by CY. As Green beam is at the center of the CRT neck, it is not affected by the magnetic field of CY due to the cancellation of the magnetic field at the center of the neck.

Misconvergence of vertical direction on Y axis is corrected by NTC (Neck Twist Coil).

A Neck Twist Coil is wound around the center of electrode G2 ~ G3 (See Figure 22) for the correction. Theoretically, as the RED and Blue beams have H1 component (They are opposite direction) as seen in Figure 22, they move to the vertical direction due to the magnetic field generated by NTC.

However as magnetic field of the NTC is the parallel to the Green beam, Green beam is not affected.

Correction waveform generator is located in DB board, output amplifier of CY is in EB board and output amplifier of NTC is in DB board.

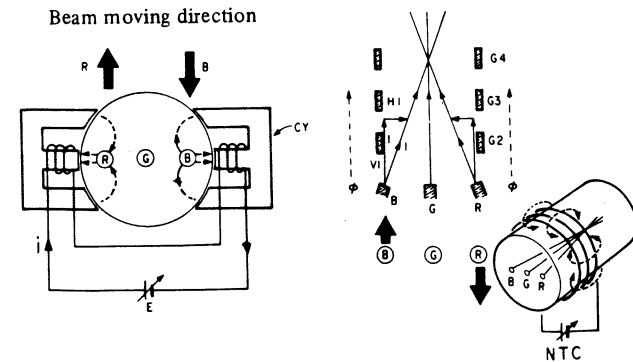
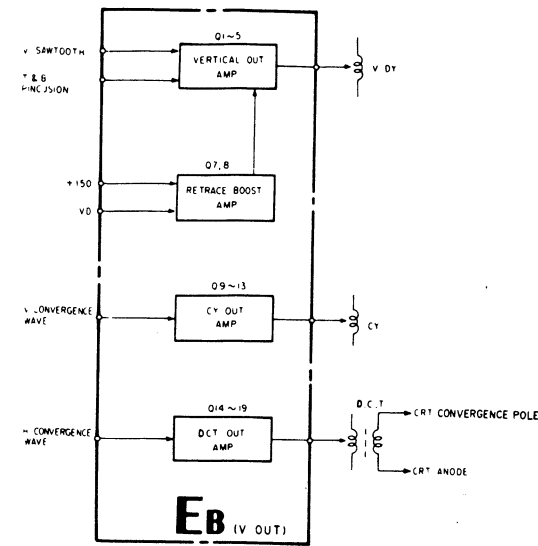
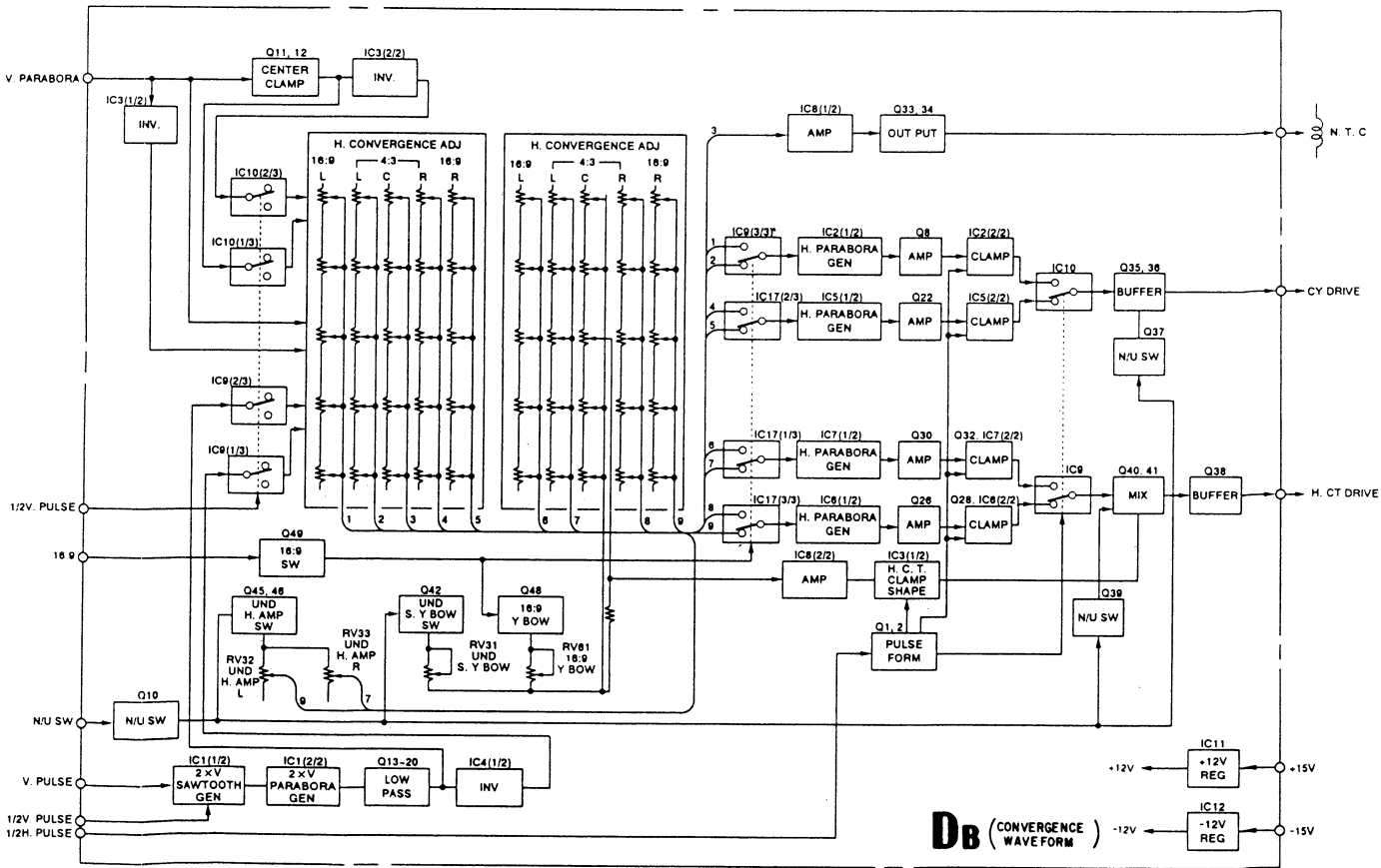


Figure 22

BLOCK DIAGRAM OF EB BOARD



BLOCK DIAGRAM OF DB BOARD



3-16. HIGH VOLTAGE REGULATOR (PA BOARD)

This high voltage regulator uses also DC-DC converter so as to reduce power consumption. The theory of operation of this circuit is as follows.

3-16-1. Detection of High Voltage

High Voltage applied to the CRT anode is converted to the low voltage by DCT block (Horizontal Convergence Transformer). This low voltage is fed to buffer amplifier IC-4(2/2) and compared with external reference voltage in IC-1. The DCT contains resistor-network and transformer for convergence adjustment. This resistor-network works as a voltage divider.

3-16-2. PWM Modulator

IC-1 works as error amplifier and PWM modulator comparing voltage between high voltage and the reference voltage is amplified and modulated so as to drive Q-102 output transistor. Output signal from IC-1, which is modulated in PWM, is fed to Q-102 via drive transformer. +B line supplied to FBT (Fly Back Transformer) circuit is controlled by switching Q-102 output transistor on/off.

3-16-3. Output Circuit

When high voltage drops down, output voltage of DCT also drops as above mentioned. At this time PWM circuit is designed so that the ON period of Q-102 output transistor should be longer than high voltage drops down. +B line, switched ON/OFF by Q-102, is supplied to converter circuit which drives FBT via LOT (Line Output Transformer).

Amount of collector current of Q-103, which drives FBT, depends upon ON period of Q-102 because PWM modulator is triggered by H. pulse. Therefore when ON period of Q-102 is longer, collector current of Q-103 increases and energy stored in capacitor C124 increases, causing potential of C124 to rise. (Refer to Figure 34) When output transistor Q-103 goes off, flyback pulse is generated by resonance between capacitor C108 and inductance obtained by parallel connection of FBT and LOT. This flyback pulse is transferred to the secondary circuit of FBT. Therefore high voltage is generated.

3-16-4. High Voltage regulator

Q102, Q107, IC4 (2/2), IC1 (IC for controlling P.W.M) and HVR (HCT block) form a regulator.

Since the detection pin voltage of HVR is decreased when the high voltage is lowered due to increase of the CRT current, it makes the switch ON time length of Q102 longer. As a result, the collector peak current of Q103 is increased and accordingly, the energy accumulated in C124, which is fed to it through the FBT, is increased. In this way, it raises the potential of C124 and regulates the high voltage.

Q103, C108, C124 and the FBT form a high voltage converter circuit.

The pulse of on-duty 60% is generated with the H pulse by a time constant circuit which consists of Q109, Q110, Q111, Q112, R143, C128, R144, C127 and D111. When Q103 is switched OFF due to the on-duty 60% pulse, flyback pulse is generated at the collector of Q103 by resonating of the LOT, FBT and C108.

3-16-5. High Voltage Protection Circuit

High voltage protector activates to shut down high voltage, when high voltage exceeds the predetermined value so as to prevent X-ray radiation.

The high voltage converted to the low voltage is detected at the terminal of DCT block. This detected voltage is fed to the $\oplus$ input terminal of comparator IC-2(2/2) via low pass filter, which is composed of resistor R245 and capacitor C216. When this voltage exceeds the reference voltage, the voltage of $\ominus$ input terminal of comparator IC-2(2/2), output level of this comparator goes high level and turns SCR (D206) gate on to shut down the drive pulse of flyback generator. Thus high voltage stops.

The reference voltage of the comparator IC-2(2/2) is made by mixing stabilized voltage (zener diode D215) and the voltage at terminal 9 of FBT. So the reference voltage goes down, when beam current of CRT increases. Therefore as beam current increases, shut-down voltage of high voltage decreases.

3-16-6. Protection Circuit for Excess Beam Current

Beam current which flows in secondary windings of FBT is measured at the terminal 9 of FBT. This beam current is converted to the voltage by resistor R1 (R3) and R2 (R4) located in PB board in series connection of secondary windings of FBT. This converted voltage is fed to $\ominus$ input of comparator IC-2(1/2) or IC-3(1/2). As beam current increases, $\ominus$ input voltage goes down. When beam current increases until $\ominus$ input voltage goes below the reference voltage ($\oplus$ input terminal voltage) output voltage of comparator goes up high level and SCR (D205 or D206) turns ON. Thus drive pulse of flyback generator is shut down. Therefore high voltage stops.

3-16-7. CRT Protection Circuit

When vertical deflection stops, this circuit activates to shut down high voltage to prevent damage of CRT.

When vertical deflection stops, there is no vertical output pulse generated at vertical output amplifier. So Q201 transistor is cut off and output of comparator IC-4(1/2) goes up high level. Q202 transistor turns on and flyback generator stops.

3-16-8. G2 Voltage Regulator

Flyback pulse generated at Q103 (H output transistor) is rectified to obtain DC voltage. This rectified DC voltage is regulated by Q104, IC-3(1/2) and Q106 transistor. Regulated 410V DC voltage is obtained. Q105 transistor which works in accordance with G2 control circuit in BI board supplied proper voltage to G2 of CRT.

3-16-9. Power Supply for Heater

Power supply to heater is generated from secondary windings of LOT. Heater voltage is adjusted by resistor R107.

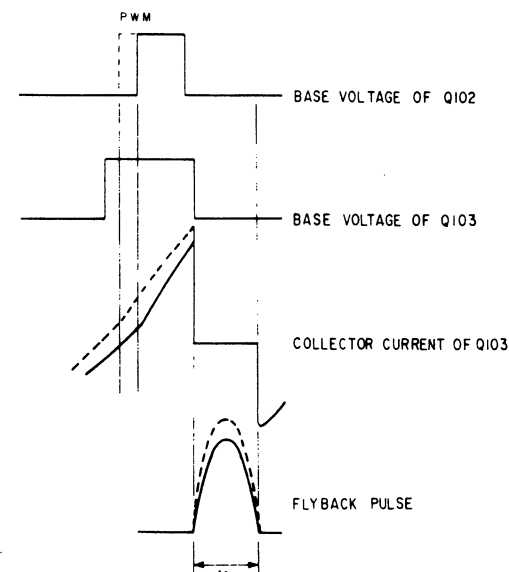


Figure 33

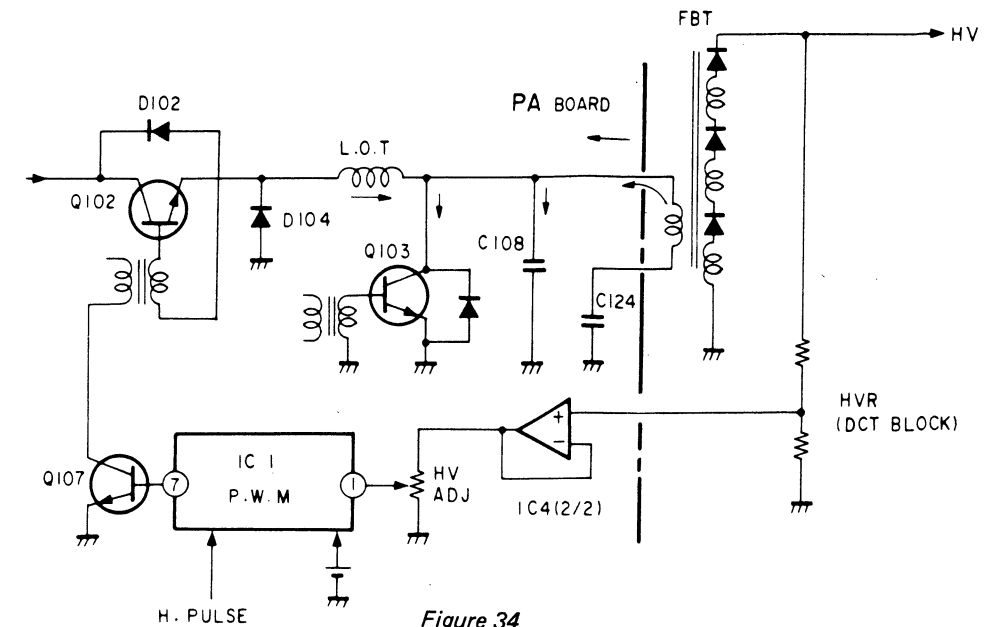
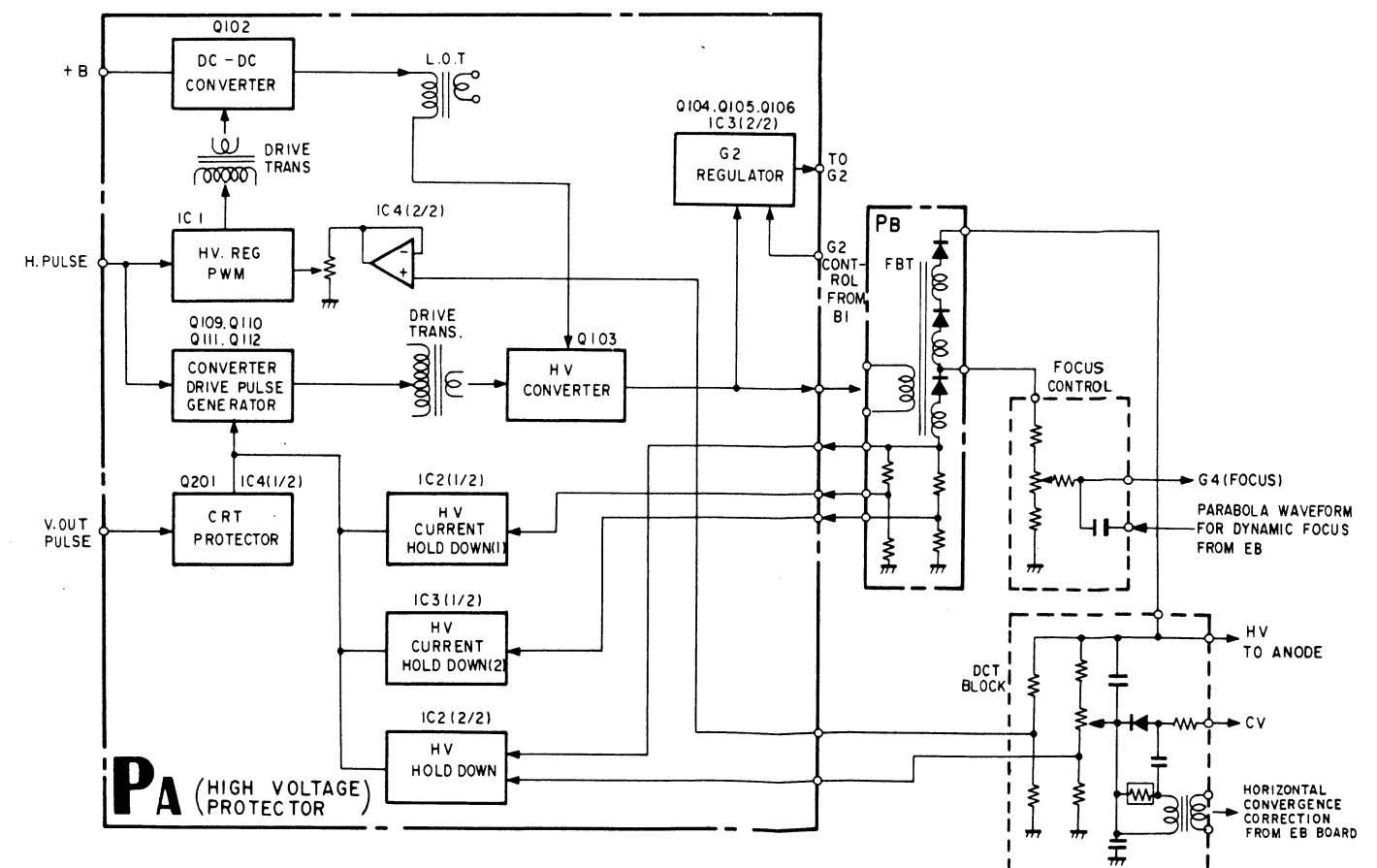


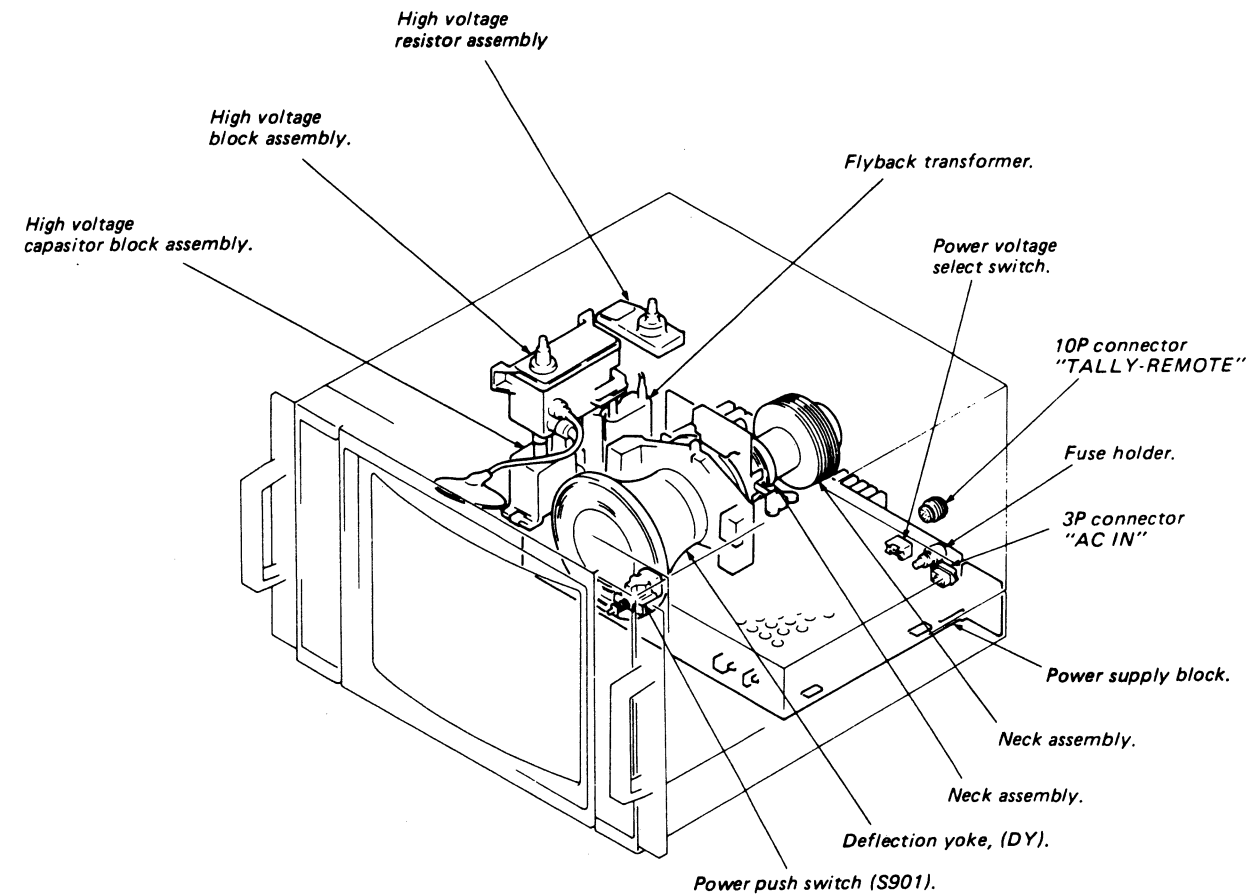
Figure 34

BLOCK DIAGRAM OF PA BOARD

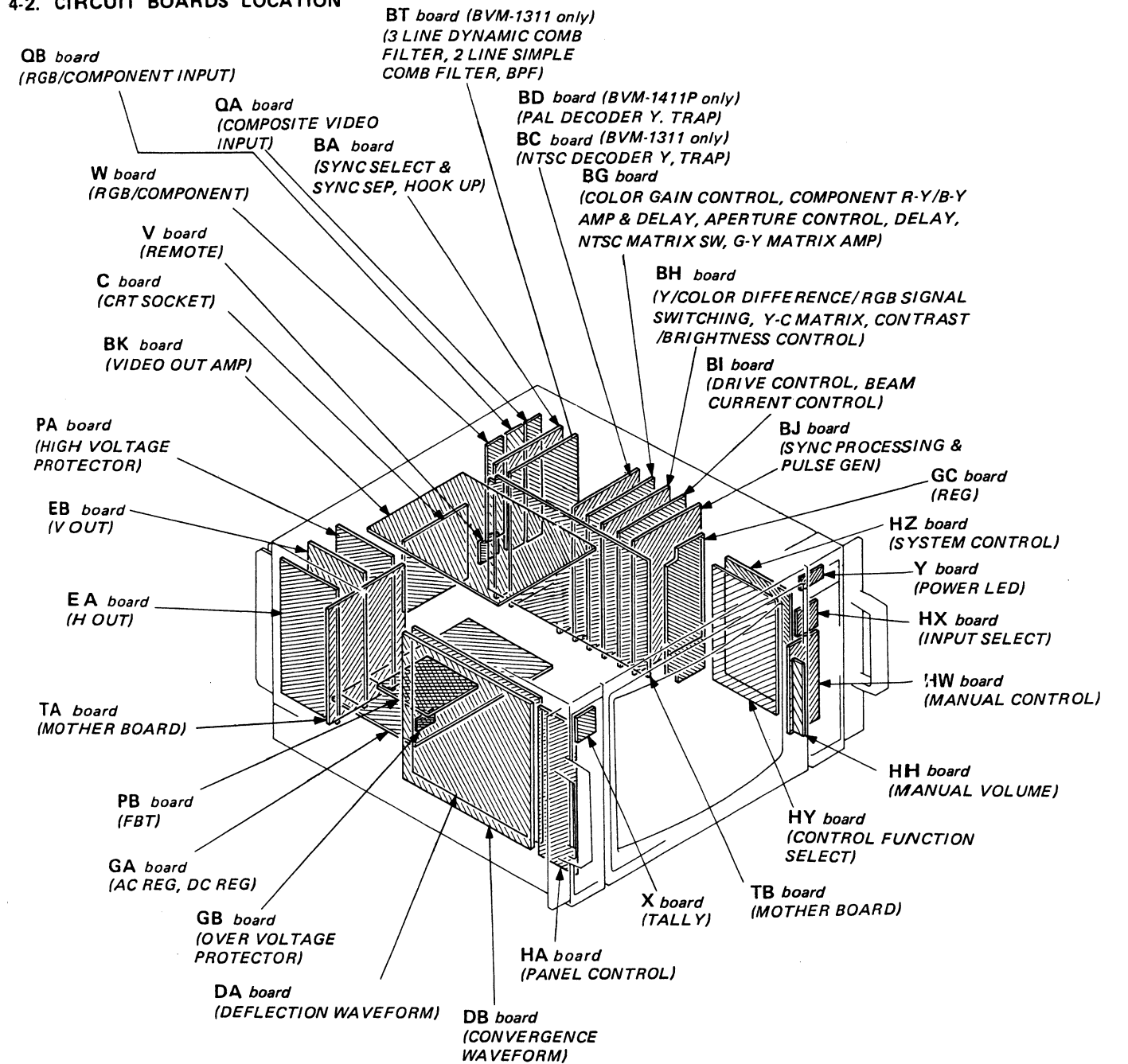


SECTION 4 ADJUSTMENTS

4-1. INTERNAL VIEW



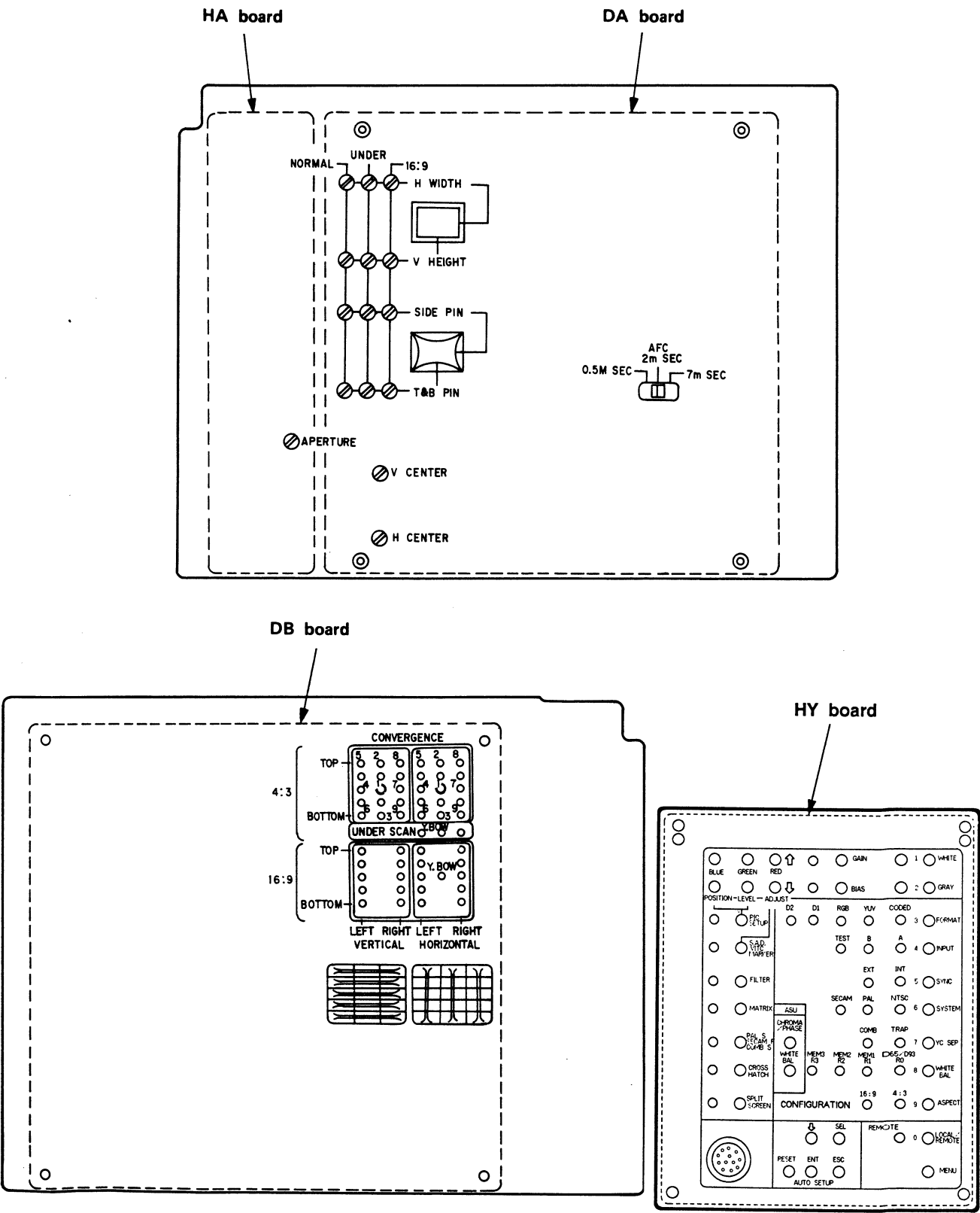
4-2. CIRCUIT BOARDS LOCATION



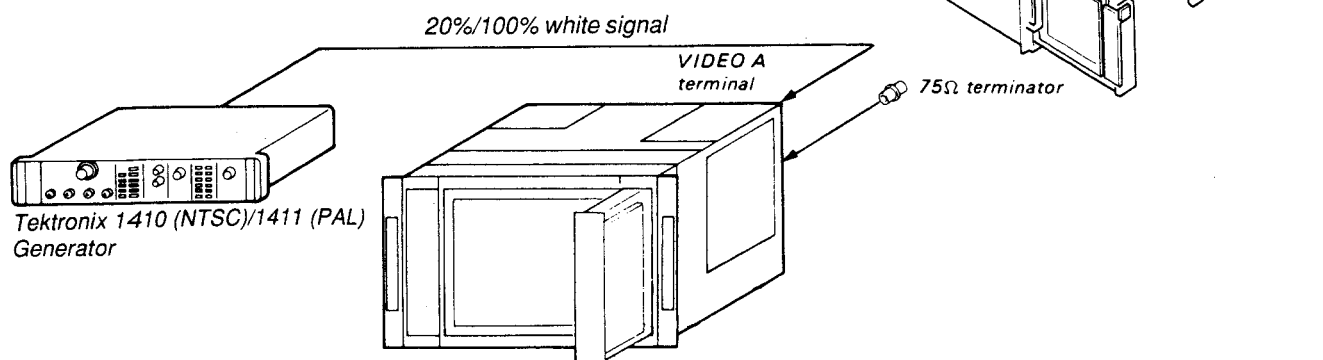
4-3. QUICK REFERENCE

BOARD SECTION	BA	BC	BD	BG	BH	BI	BJ	BK	BT	C	DA	DB
CIRCUIT DESCRIPTION	3-1	3-19	3-21	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-17	—	3-31	3-27
ADJUSTMENTS	4-23 4-27	4-33	4-63	4-23 4-29	4-23	—	4-21 4-32 4-46	4-47	4-49	—	4-78	—
BLOCK DIAGRAM	3-2	3-20	3-22	3-4	3-5	3-7	3-9	3-13	3-17	—	3-33	3-28
MOUNTING DIAGRAM	5-7	5-17	5-25	5-27	5-35	5-37	5-45	5-47	5-12	5-74	5-55	5-57
SCHEMATIC DIAGRAM	5-9	5-19	5-22	5-29	5-32	5-39	5-42	5-49	5-15	5-77	5-52	5-59
ELECTRICAL PARTS LIST	7-1	7-4	7-18	7-5	7-8	7-11	7-13	7-15	7-21	7-31	7-35	7-38
BOARD SECTION	EA	EB	GA	GB	GC	HA	HH	HW	HX	HY	HZ	PA
CIRCUIT DESCRIPTION	3-35	3-23	3-25	3-25	—	—	—	—	—	—	—	3-37
ADJUSTMENTS	—	—	4-13	—	—	—	—	4-20	—	—	—	4-16
BLOCK DIAGRAM	3-36	3-24	3-26	3-26	—	—	—	—	—	—	—	3-38
MOUNTING DIAGRAM	5-62	5-63	5-69	5-68	5-90	5-81	5-81	5-81	5-96	5-81	5-87	5-75
SCHEMATIC DIAGRAM	5-65	5-65	5-71	5-71	5-93	5-79	5-79	5-79	5-79	5-79	5-84	5-77
ELECTRICAL PARTS LIST	7-42	7-32	7-26	7-31	7-25	7-43	7-46	7-46	7-43	7-46	7-43	7-33
BOARD SECTION	PB	QA	QB	TA	TB	V	W	X	Y	Z		
CIRCUIT DESCRIPTION	3-37	3-1	3-1	—	—	—	—	—	—	—		
ADJUSTMENTS	—	—	—	—	—	—	—	—	—	—		
BLOCK DIAGRAM	3-38	3-2	3-2	—	—	—	—	—	—	—		
MOUNTING DIAGRAM	5-74	5-90	5-90	5-95	5-99	5-90	5-90	5-81	5-81	5-103		
SCHEMATIC DIAGRAM	5-77	5-93	5-93	5-97	5-101	5-93	5-93	5-79	5-79	—		
ELECTRICAL PARTS LIST	7-25	7-25	7-25	7-49	7-48	7-32	7-43	7-43	7-43	7-49		

4-4. SUB CONTROL PANEL LOCATION

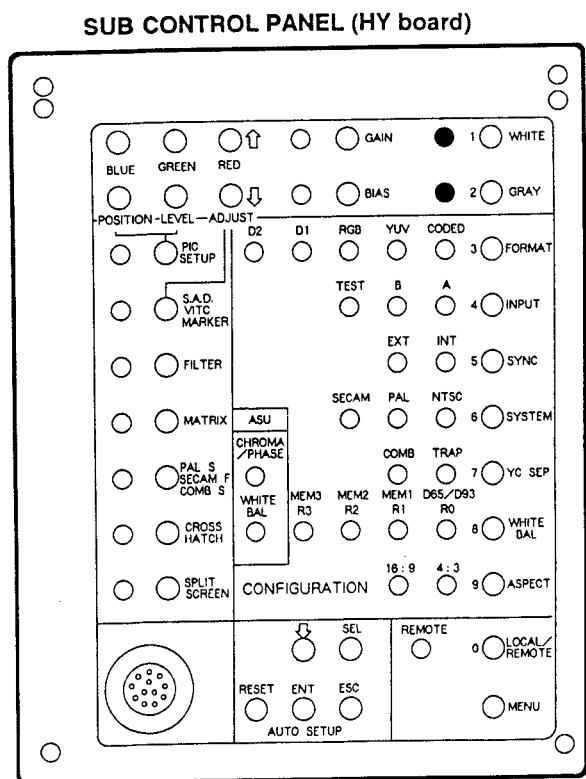


WHITE BALANCE ADJUSTMENT



1. BRIGHTNESS MANUAL switch MANUAL. (☐)
CONTRAST MANUAL switch MANUAL. (☐)
2. Turn BRIGHT and CONTRAST to become 100 with PRESET MENU.
SAVE the DATA.
3. Switch off the MANUAL switches of CONTRAST and BRIGHT.
4. Input 20% white signal to VIDEO A connector.
5. Turn BIAS controls (S21:Red, S23:Green, S32:Blue) on the HY board to adjust the BRIGHTNESS to 3.8 cd/m² (nit) and white balance using COLOR ANALYZER and check 3.8 cd/m² (nit) by LUMINANCE METER.
6. Input 100% white signal to VIDEO A connector.
7. Turn GAIN controls (S20:Red, S22:Green, S31:Blue) on The HY board to adjust the BRITHNESS at HIGH LIGHT to 137 cd/m² (nit) and white balance using COLOR ANALYZER and check 137 cd/m² (nit) by LUMINANCE METER.
8. Repeat procedure steps 4 to 8 if necessary.
9. Save the date with SAVE WHITH BALANCE MENU.

FRONT PANEL (R)



4-6. SAFETY RELATED ADJUSTMENTS

+B PROTECTOR (■ R52 R53)

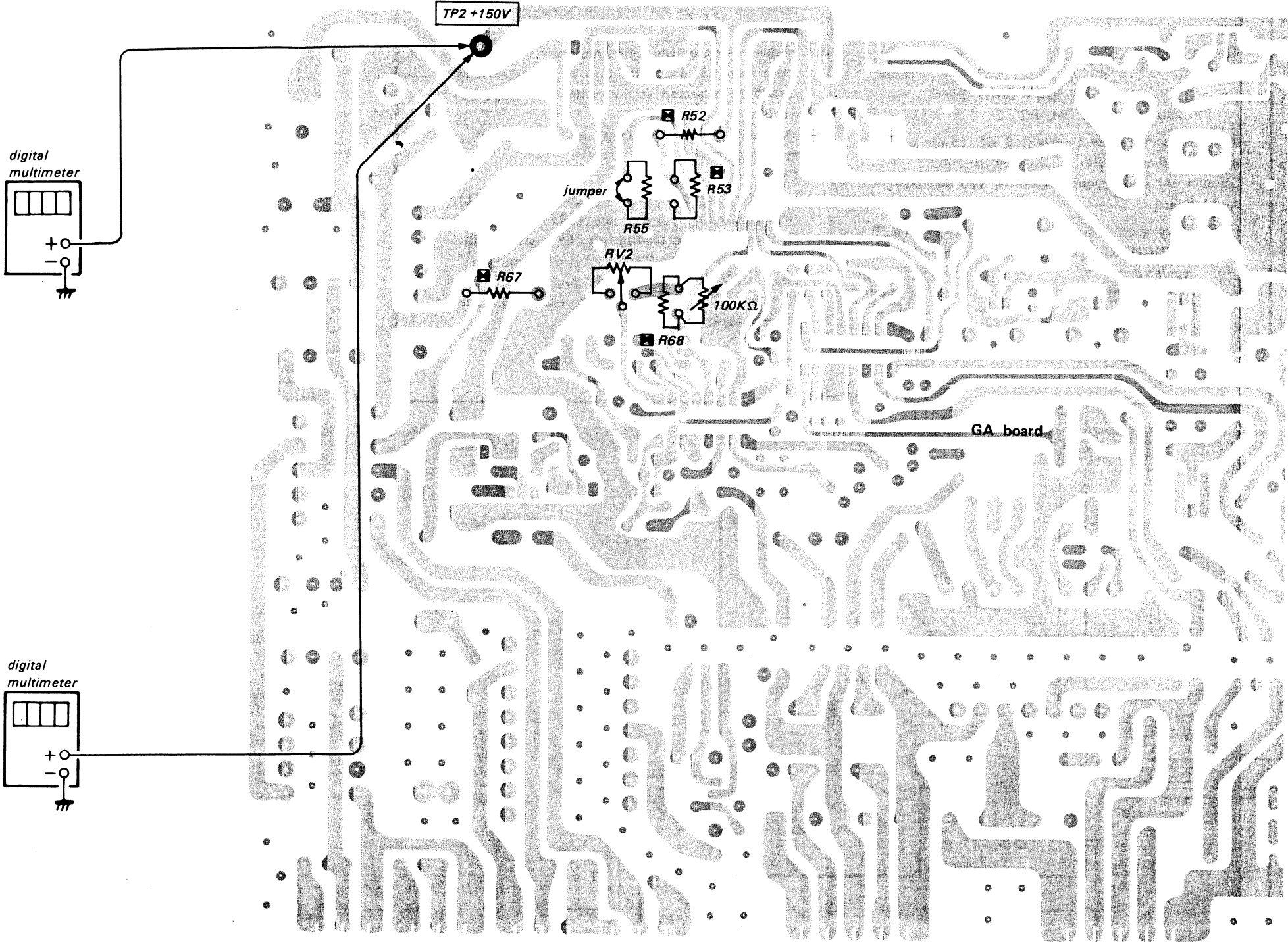
When replacing the following components (marked ■ on the schematic diagram), make this confirmation.

- GA Board . . . R52, R53, Q14, Q13
- GB Board . . . D5, D6, R5, Q4, Q3, D7, R4, Q5, D8, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Short-circuit R55 on GA Board.
3. Connect 100kΩ variable resistor with R68 in parallel on GA Board.
4. Confirm that the reading on the digital multimeter drops abruptly from +182.0V ~ +216.0V to 0V by turning the 100kΩ variable resistor so that the value of the resistor decrease from maximum value.
5. If step 4 isn't satisfied, check that the mounted components are correct.



+B MAX CONFIRMATION (■ R67, R68)

When replacing the following components (marked ■ on the schematic diagram), make this confirmation.

- GA Board . . . R67, RV2, R68, IC3, C59, R78

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Confirm that the reading on the digital multimeter is between +155.0V and +175.0V when RV2 variable resistor is turned to fully clockwise.
3. After confirmation, make the reading on the digital multimeter into +150.0V ±0.5V by adjusting RV2 on GA Board.

TP2 +150V

jumper

R52

R53

R55

RV2

100K Ω

R68

R67

GA board

HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

- ☒ DCT Block
- ☒ PA Board . . . IC2, R201, R202, D215, R225, R226, R227, R228, D214, R229, R230, D207, R213, R214, D205, R243

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeters to TP1 and ⑦ pin of IC4 and IHV(1) on PA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

IN case of using electrostatic voltmeter

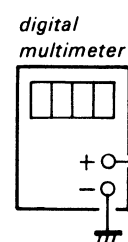
1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counter-clockwise. (manual button is IN)
2. Connect 200k Ω variable resistor with R125 in parallel on PA Board.
3. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 29.0kV ~ 27.0kV to 0V by turning slowly the 200k Ω variable resistor so that the value of the resistor decrease from maximum value.
4. If step 3 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3.
5. Set CONTRAST and BRIGHTNESS controls to fully clockwise. (maximum; the reading on the digital multimeter of IHV(1) on PA Board should be between -5.9V and -7.7V)
6. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 28.0kV ~ 26.0kV to 0V by turning slowly the 200k Ω variable resistor and check the difference of memorize voltage between in step 3 and 6 is over 400V.

IN case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counter-clockwise. (manual button is IN)

(☒ R227, R228)

2. Connect 200k Ω variable resistor with R125 in parallel on PA Board.
3. Confirm that the reading on the digital multimeter of TP1 on PA Board is between 9.10V and 9.30V.
4. If step 3 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3.
5. Confirm that the reading on the digital multimeter at ⑦ pin of IC4 on PA Board drop abruptly from between 9.10V and 9.35V by turning slowly the 200k Ω variable resistor.
6. If step 5 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3 through 5.
7. Set CONTRAST and BRIGHTNESS controls fully clockwise. (maximum; the reading on the digital multimeter of IHV(1) on PA Board should be between -5.9V and -7.7V)
8. Confirm that the reading on the digital multimeter at ⑦ pin of IC4 on PA Board drops abruptly from between 9.05V and 8.85V by turning slowly the 200k Ω variable resistor so that the value of the resistor decrease from maximum value.
9. If step 8 can not be performed, select the value of R227 and R228 (1/6W metal-film) and repeat above step 3 through 8.



BEAM CURRENT PROTECTOR 1 CONFIRMATION

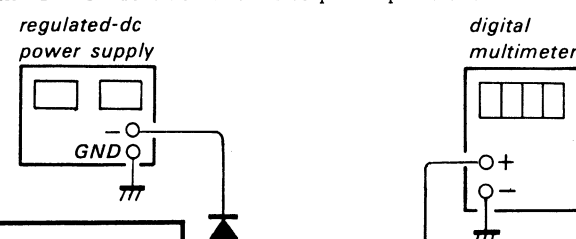
(☒ R222)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

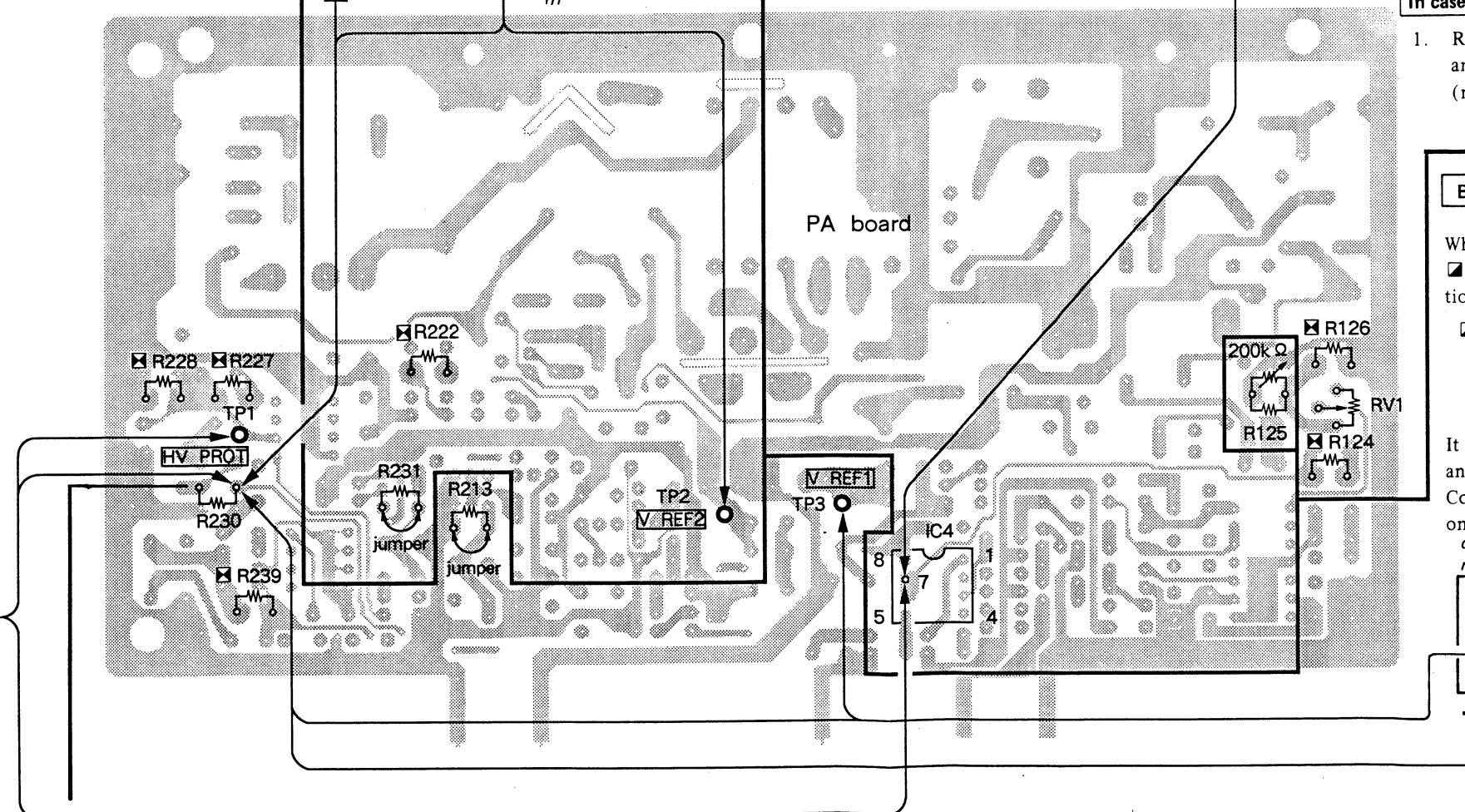
- ☒ PA Board . . . R201, R202, D215, R220, R221, R222, R223, R224, IC2, D206, R213, R214, D205, R242
- ☒ PB Board . . . FBT, R1, R2

It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation. Connect the digital multimeters to TP2 and IHV(1) on PA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position.



2. Confirm that the reading on the digital multimeter of TP2 on PA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP2 is more than +32.5V, 1M Ω $\pm 1\%$ 1/6 W (metal-film) should be mounted at the portion of R222 on PA Board. (Normally in this position no component is mounted.)
4. Short-circuit R213.
5. Connect a regulated dc power supply to IHV(1) through a diode. (for example, 1SS119).
6. Confirm that the reading on the digital multimeter of IHV(1) on PA Board is between -7.6V and -11.8V when the raster disappears. If step 6 can not be perform, check that the mounted components are correct.



HIGH VOLTAGE

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BEAM CURRENT PROTECTOR 1 CONFIRMATION

(☒ R222)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

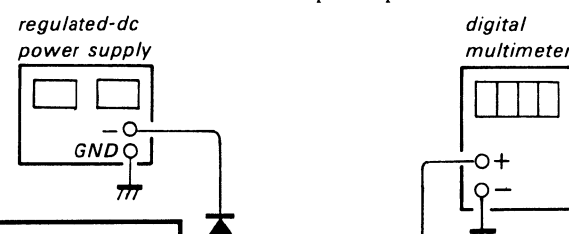
☒ PA Board . . . R201, R202, D215, R220, R221, R222, R223, R224, IC2, D206, R213, R214, D205, R242

PB Board . . . FBT, R1, R2

It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation.

Connect the digital multimeters to TP2 and IHV(1) on PA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position.



2. Confirm that the reading on the digital multimeter of TP2 on PA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP2 is more than +32.5V, 1M Ω $\pm$ 1% 1/6 W (metal-film) should be mounted at the portion of R222 on PA Board.
(Normally in this position no component is mounted.)
4. Short-circuit R213.
5. Connect a regulated dc power supply to IHV(1) through a diode. (for example, 1SS119).
6. Confirm that the reading on the digital multimeter of IHV(1) on PA Board is between -7.6V and -11.8V when the raster disappears.
If step 6 can not be performed, check that the mounted components are correct.

HIGH VOLTAGE REGULATOR CONFIRMATION

(☒ R124, R126)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

☒ DCT Block

PA Board . . . IC4, R123, R124, RV1, R125, R126, IC1, R203, R204, D216, R137, R138, R136

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeters to ⑦ pin of IC4 on PA Board.

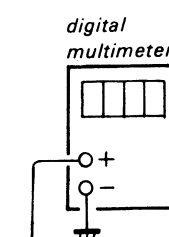
Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

In case of using an electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out.)



BEAM CURRENT PROTECTOR 2 (☒ R239)

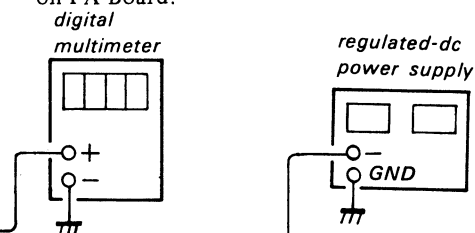
When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

☒ PA Board . . . R203, R204, D216, R237, R238, R239, R240, R241, IC3, R231, R232, D204, R247

PB Board . . . FBT, R3, R4

It is necessary to use a regulated DC power supply and a digital multimeter for this confirmation.

Connect the digital multimeters to TP3 and IHV(1) on PA Board.



1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is OUT)
2. Confirm that the reading on the digital multimeter of TP3 on PA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP3 is more than +32.5V, 1M Ω $\pm$ 1% 1/6 W (metal-film) should be mounted at the portion of R239 on PA Board.
(Normally in this portion no component is mounted.)
4. Short-circuit R213.
5. Connect a regulated dc power supply to IHV(1) through a diode. (For example, 1SS119 etc.)
6. Confirm that the reading on the digital multimeter of IHV(1) on PA Board is between -7.6V and -11.8V when the raster disappears.
7. If step 6. can not be performed, check that the mounted components are correct.

4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

FRONT PANEL (R)

- INPUT selector 1 HX board
- CONTRAST MANUAL switch PRESET HW board
- BRIGHTNESS MANUAL switch PRESET
- CHROMA MANUAL switch PRESET
- PHASE MANUAL switch PRESET

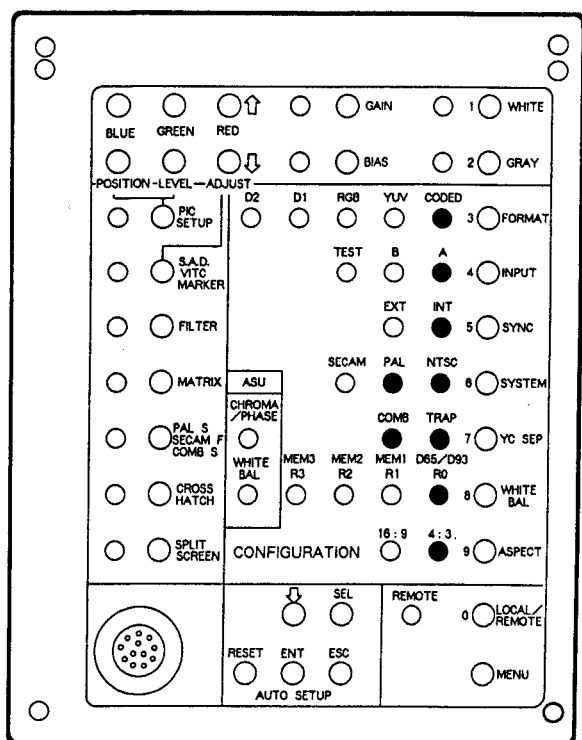
FRONT PANEL (L)

- SCAN MODE switch
- UNDER SCAN NOR HA board
- H. DELAY NOR
- V. DELAY NOR
- SCREEN switch (R) NOR
- SCREEN switch (G) NOR
- SCREEN switch (B) NOR
- APT switch NOR
- BLUE ONLY switch NOR
- MODE selector AUTO

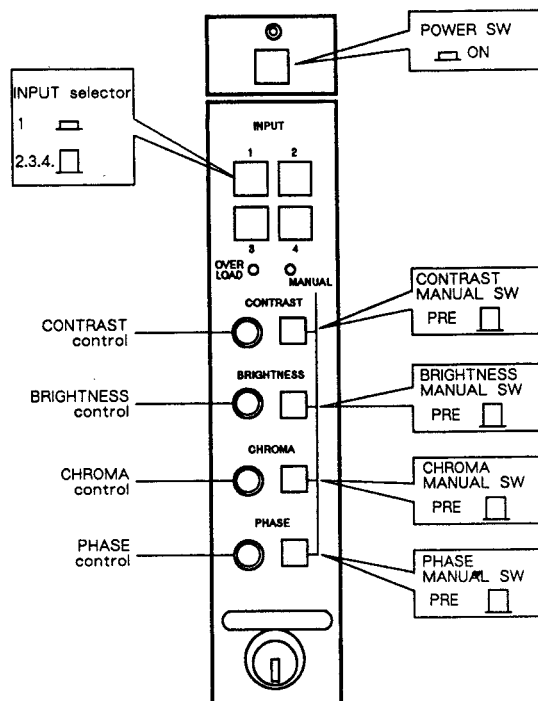
SUB CONTROL PANEL

- FORMAT button CODED
- INPUT button A
- SYNC button INT
- COLOR SYSTEM button NTSC (BVM-1311)
- Y C SEP button PAL (BVM-1411P)
- WHITE BALANCE button D65/D93
- ASPECT button 4 : 3
- PIC SETUP button OFF
- SAD/VITC/MARKER button OFF
- FILTER button OFF
- MATRIX button OFF
- PAL S/SECAM F/COMB S button OFF
- CROSS HATCH button OFF
- SPLIT SCREEN button OFF
- WHITE button OFF
- GRAY button OFF
- AFC switch 2m sec DA board

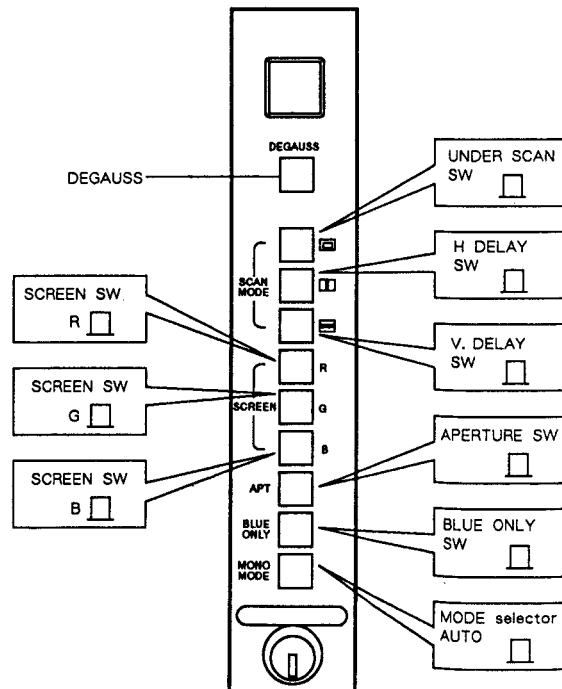
SUB CONTROL PANEL (HY board)



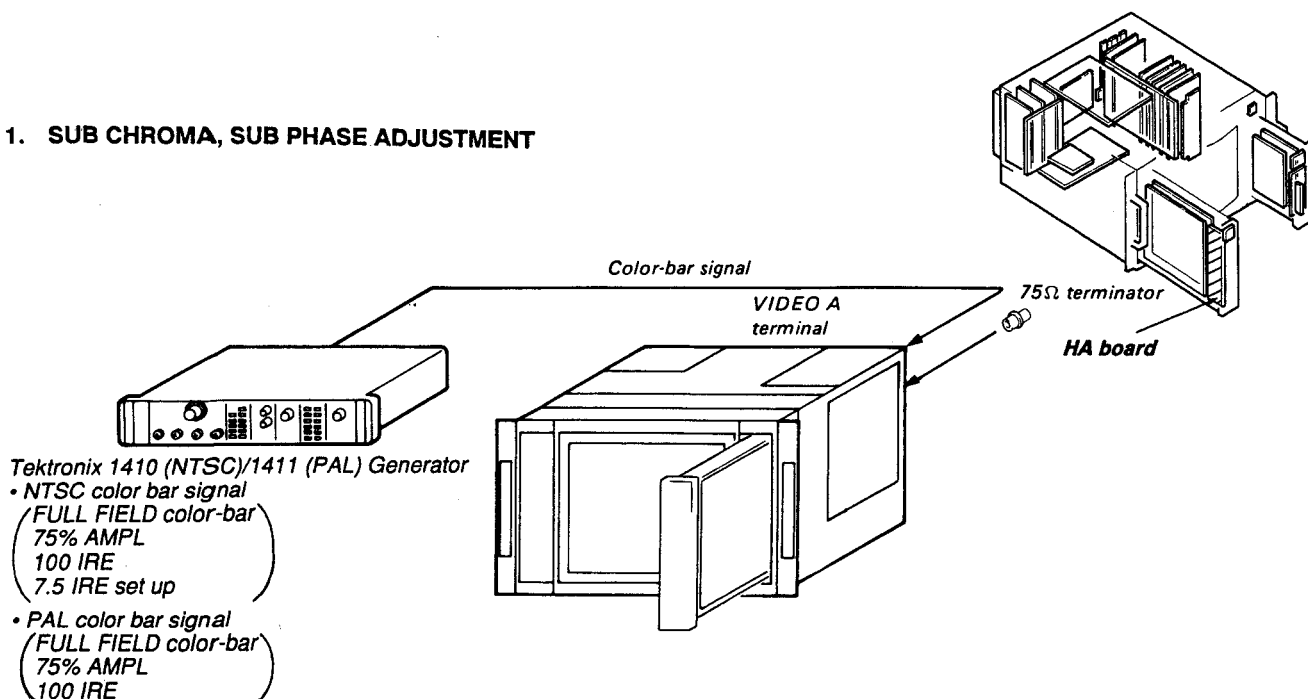
FRONT PANEL (R)



FRONT PANEL (L)

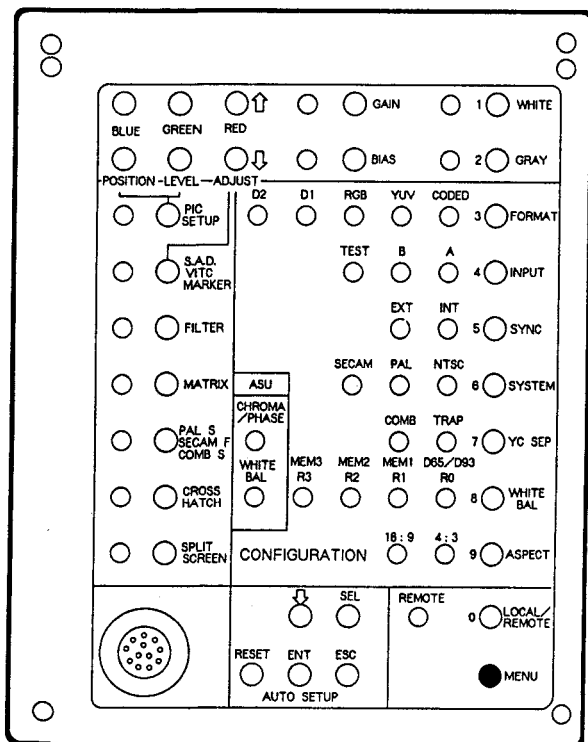


1. SUB CHROMA, SUB PHASE ADJUSTMENT

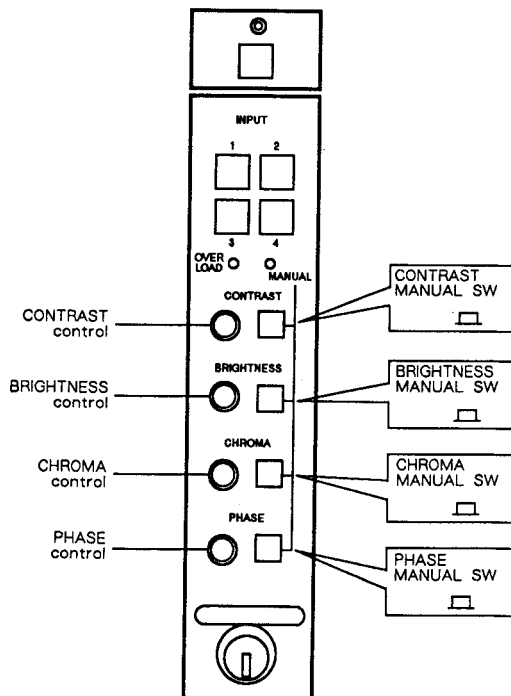


1. Press the MENU switch to select the PRESET menu.
2. CONTRAST, BRIGHT, CHROMA, PHASE MANUAL switch (FRONT PANEL).....MANUAL
3. Turn each volume control to adjust so that the value on the screen becomes 100.
4. Save the DATA.

SUB CONTROL PANEL (HY board)



FRONT PANEL (R)



5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

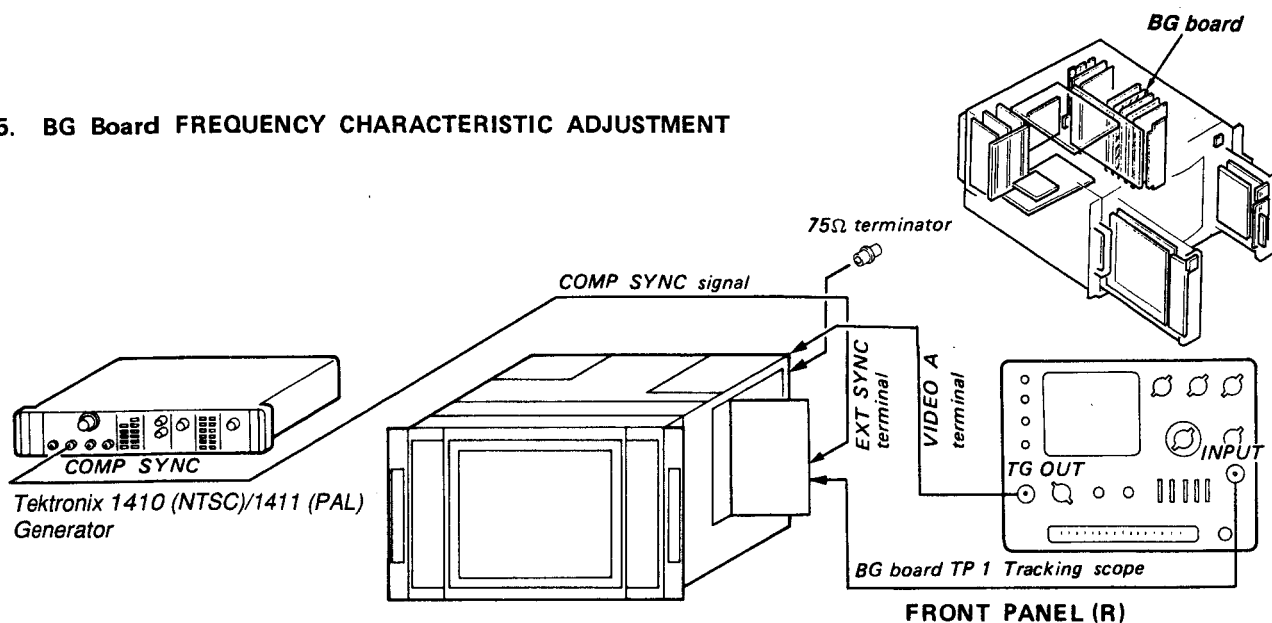


Fig. 5-1

- Complete the connection as shown in Fig 5-1.
 - SYNC button (SUB CONTROL PANEL)..... EXT
 - CONTRAST control Minimum
 - BRIGHTNESS control Minimum
 - S1 (BG Board) 4.5MHz (4.5 6.5)
- Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within 0±0.5dB)

*Waveform movement by RV1, CV2, CV3

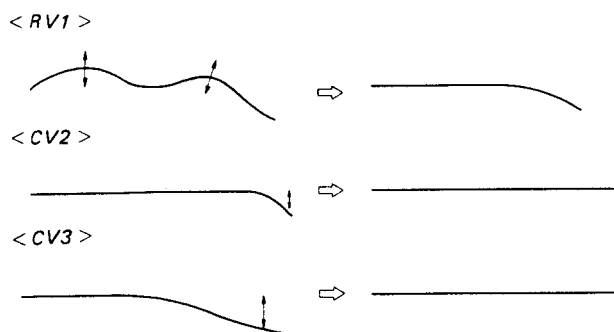


Fig. 5-2

- Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.

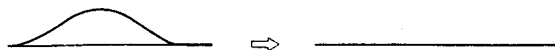
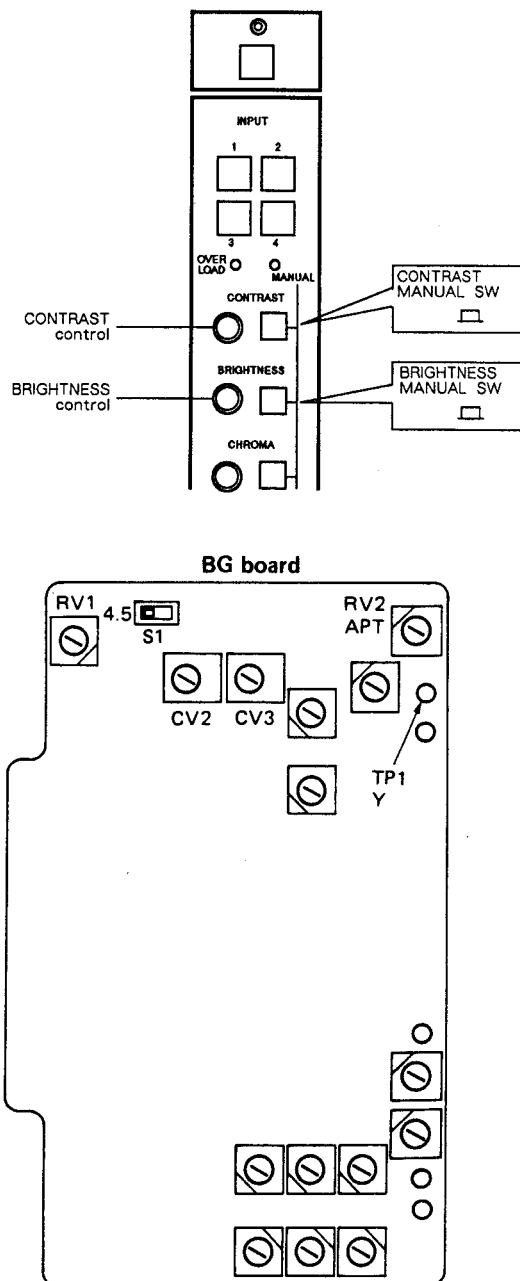


Fig. 5-3



6. COMPONENT INPUT LEVEL ADJUSTMENT

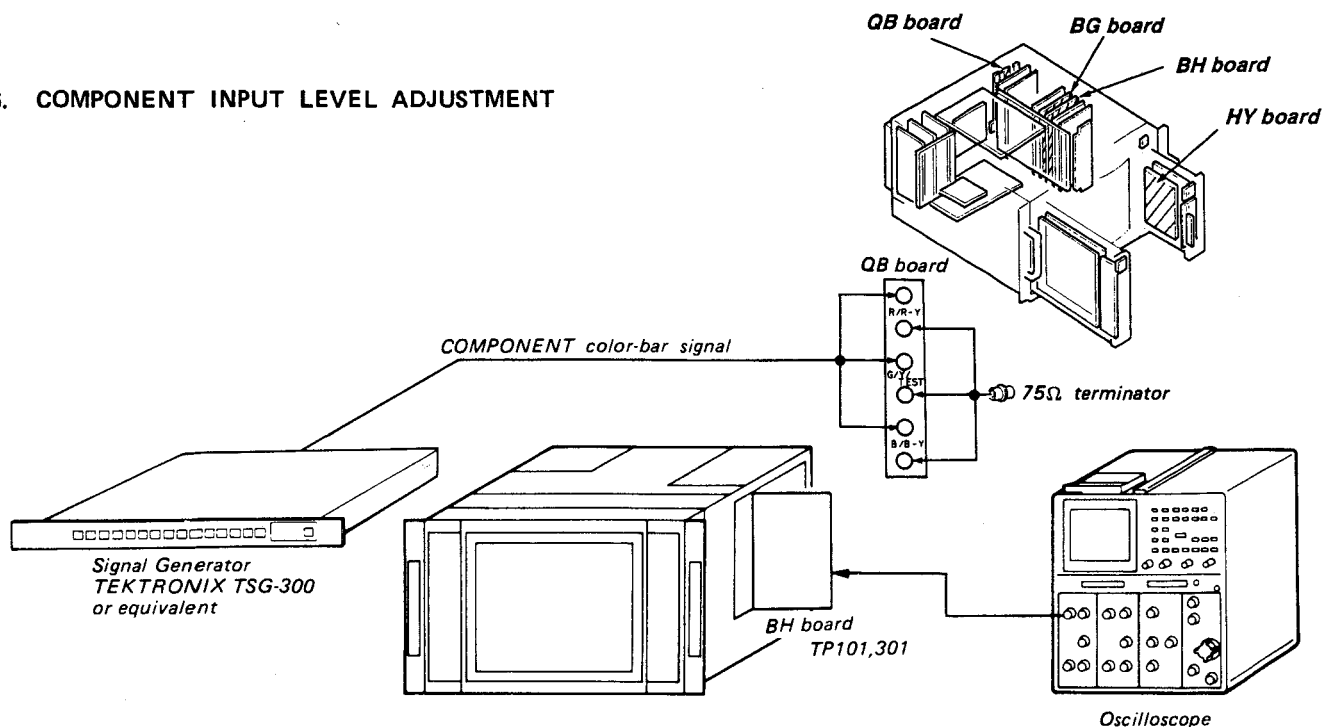


Fig. 6-1

1. Complete the connections as shown in Fig. 6-1.
 - **FORMAT** button (SUB CONTROL PANEL) YUV
2. Connect an oscilloscope to the TP-101 of BH board.
3. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)

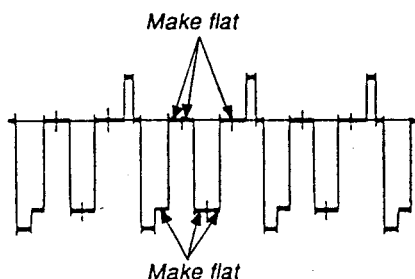


Fig. 6-2

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

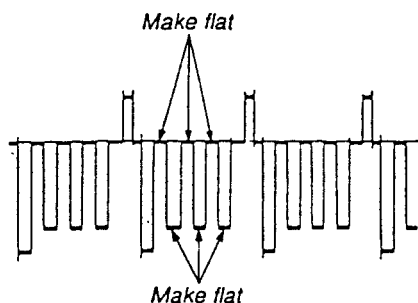
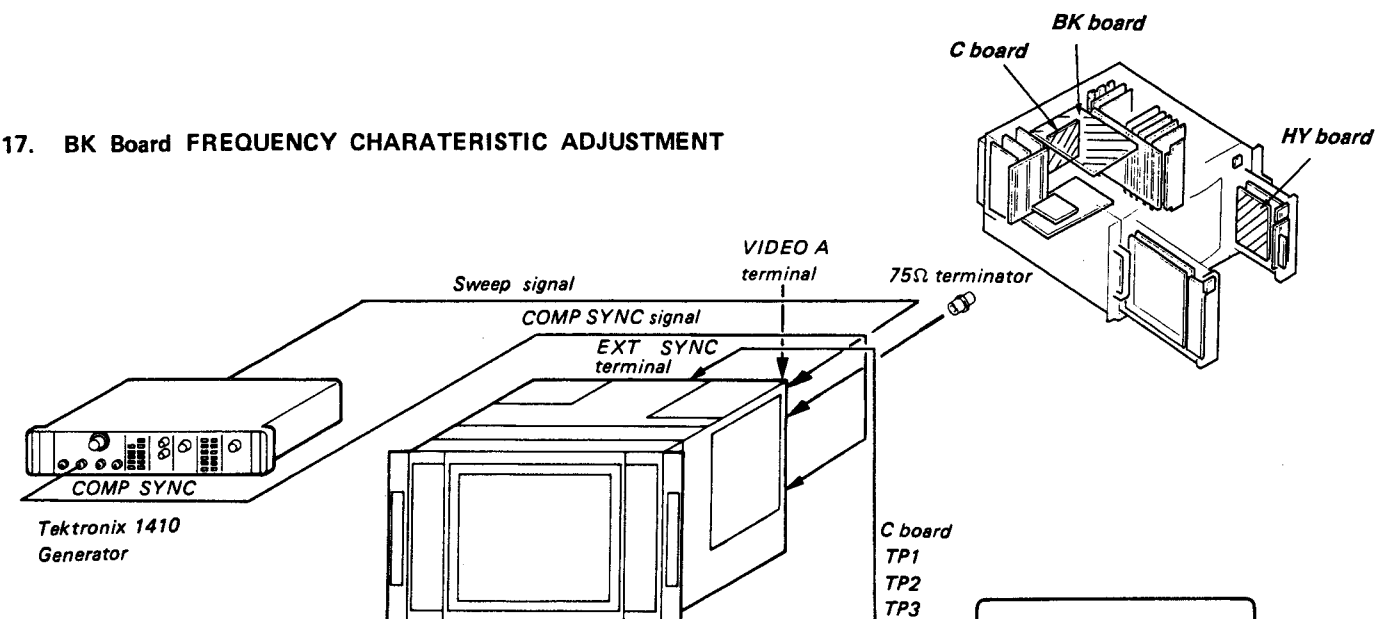


Fig. 6-3

17. BK Board FREQUENCY CHARACTERISTIC ADJUSTMENT



1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
 - SYNC button (SUB CONTROL PANEL) EXT
 - MODE selector (FRONT PANEL (L)) MONO ()
 - FILTER button (SUB CONTROL PANEL) ... OFF
2. Connect an oscilloscope to the TP1 on the C board.
 - *Probe: 100:1
3. Adjust CV101 and CV102 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
4. Connect an oscilloscope to the TP2 on the C board.
5. Adjust CV201 and CV202 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
6. Connect an oscilloscope to the TP3 on the C board.
7. Adjust CV301 and CV302 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.

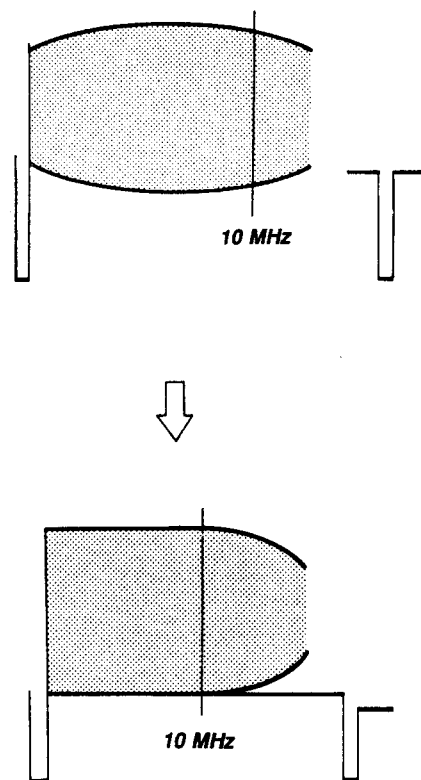
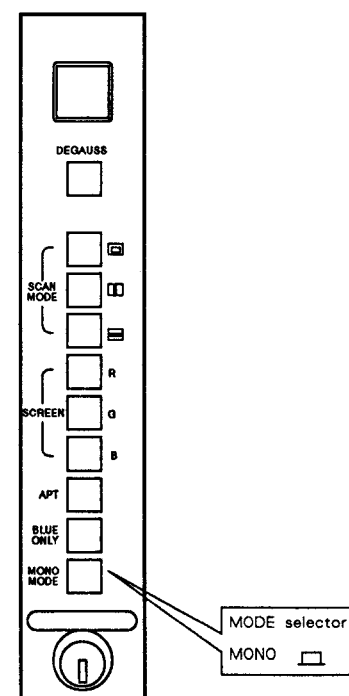
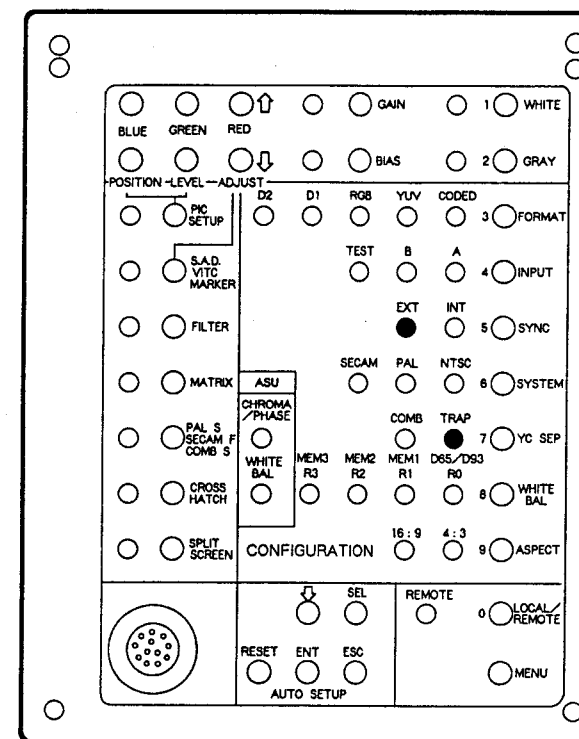


Fig. 17-1

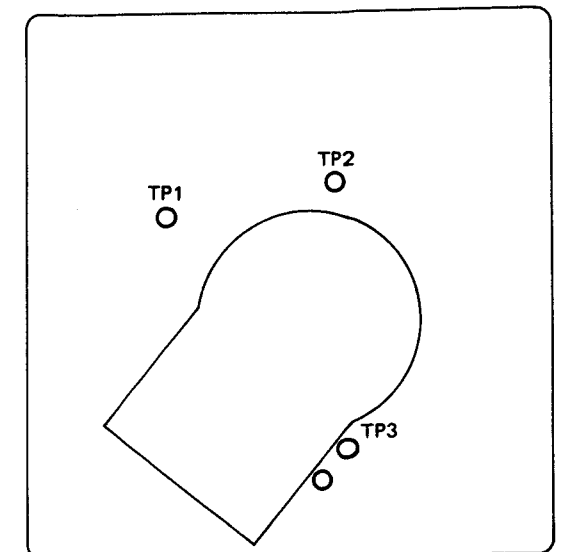
FRONT PANEL (L)



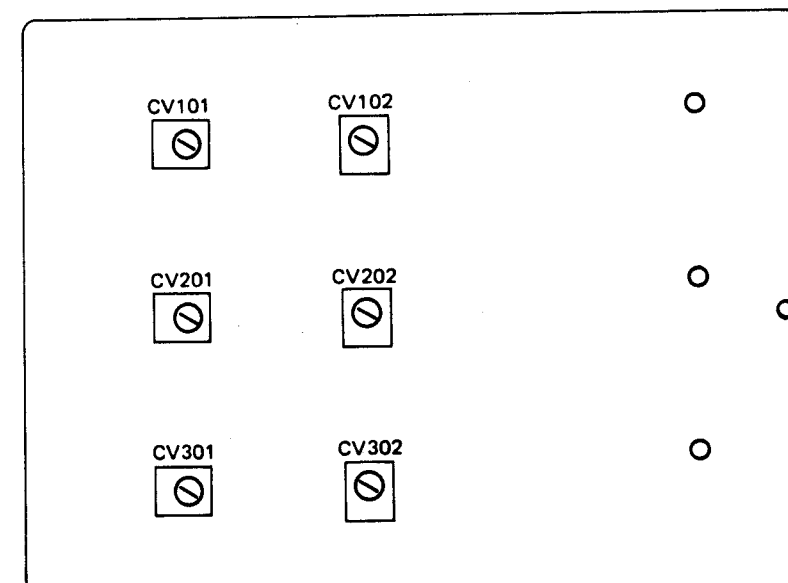
SUB CONTROL PANEL (HY board)



C board

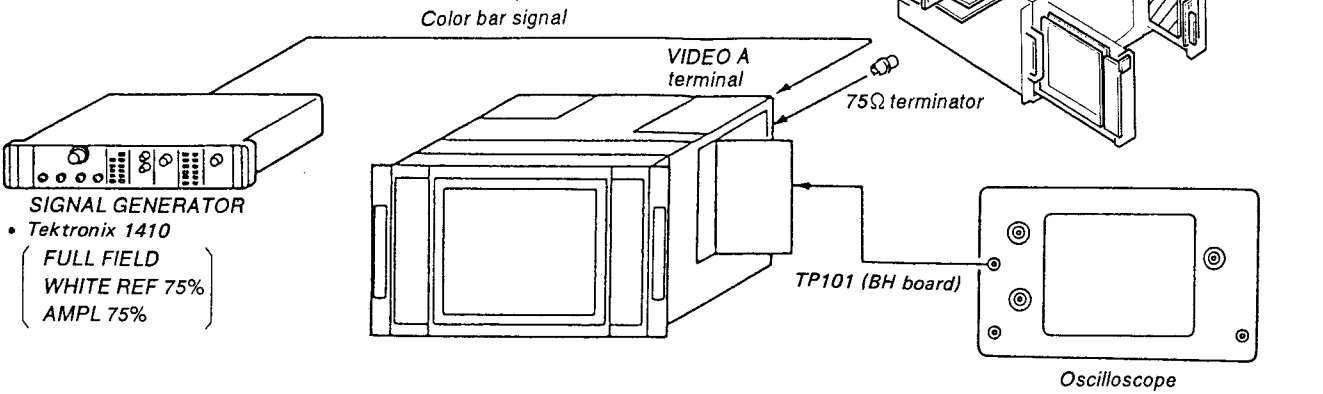


BK board



18. BT Board COMB FILTER ADJUSTMENT (BVM-1311 ONLY)

18-1. BT Board Partial Adjustment



Luminance Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button on the sub control panel to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-1 to the center of the oscilloscope using RV3 (luminance level) on the BT board.

Chroma Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-1 to the center of the oscilloscope using RV8 (chroma level) on the BT board.

FRONT PANEL (L)

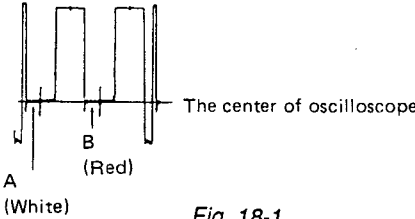
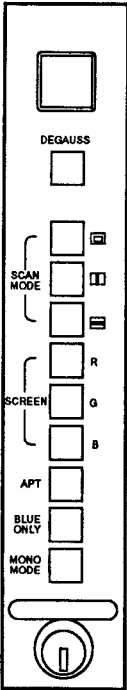
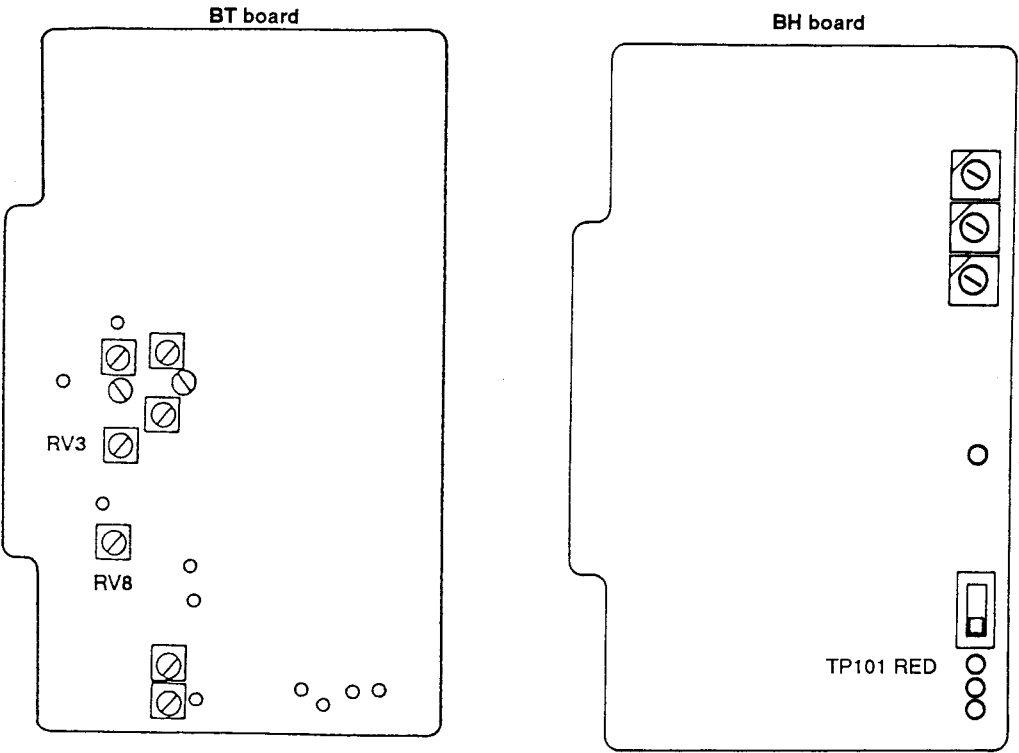


Fig. 18-1

Note: Never attempt to turn the following parts as these cannot be easily adjusted.
FL1, FL2, FL3, DL3, DL5, DL6, DL8



SUB CONTROL PANEL (HY board)

